DRAFT

Proposed Minimum Water Level Criteria for Lake Okeechobee, the Everglades, and the Biscayne Aquifer within the South Florida Water Management District

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Prepared by Staff of:

Water Supply Department

South Florida Water Management District
West Palm Beach, Florida
January 2000

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Appendix A

Supplemental Information for the

Biscayne Aquifer

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Prepared by Staff of:

Planning Department

South Florida Water Management District

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January, 2000

APPENDIX A - SUPPLEMENTAL INFORMATION FOR THE BISCAYNE AQUIFER

AQUIFER WATER LEVEL/WATER QUALITY MONITORING RESULTS.

The District's primary focus in developing a minimum level for the Biscayne aquifer involved the review and analysis of water level and water quality data from more than 500 wells located along the lower east coast. Water level and water quality data collected from these wells were analyzed to determine if a relationship exists between water levels, duration of low water level events and subsequent movement of the salt water interface in response to these low water events. Water level data from each well was evaluated to determine average dry season and wet season water levels as well as long term trends. Chloride concentrations were also examined to determine whether or not the salt water front (a) had reached a particular well, (b) appeared to be stable, and/or (c) appeared to be either moving inland or retreating seaward. Stage duration curves were developed for each coastal water control structure to determine mean (50th percentile) and standard deviation (i.e., the 84th percentile) water levels at each salinity control structure. These data are discussed below.

In addition to the above effort, detailed statistical analyses were preformed on 49 monitoring wells in Broward County to investigate the correlation between the observed chloride concentration and water table elevation. Each monitor well was classified based upon its distance to the coast and its geographical location. Water levels were converted to equivalent fresh water heads to account for the denser salt water contained in some wells. These data are presented in **Table A-1**.

Although no significant correlation was noted between equivalent freshwater heads and chloride concentration, statistical analyses showed a relationship between the duration of low water periods and seasonal versus permanent movement of the salt water interface. For example, monitoring well G-1179 showed that in 1985 average annual water levels were depressed for a period of four months resulting in a noticeable movement of the saline interface. The salt water front retreated back to its former position after water levels had recovered during the following year. However, in 1989/90, when average annual water levels were depressed for an extended period of time, the salt water front moved inland and did not return to it's previous position. These observations support the numerical simulations conducted by Merritt (1996) which show that short term water level fluctuations do not result in long term movement of the salt water interface. However, permanent movement of the interface appears to occur when water levels are depressed for more than six months, thus affecting the average annual water level at that location.

Review of historical water level and water quality data from over 500 wells located along Florida's lower east coast (Table A-2) showed that the relationship between chloride concentration and water levels were not as strongly correlated as might have been expected. In general, the higher the water level, the less likely saltwater was present in the well. However, even under conditions where freshwater levels were in excess of five feet NGVD, six percent of the observations showed chloride concentrations in excess of 1,000 ppm. In addition, when water

Table 1. Summary of selected monitoring wells in Broward County.

No.	Station	Depth (ft)	Zone	Dist	No. of Obs	Chloride Concentration		
						Mean (ppm)	S.D. (ppm)	Corr. Coeff
1	G-2074	168	D	2	59	9973	2082	-0.115
2	G-1433	142	D	2	2	925	247	1.000
3	G-1435	196	D	3	1	32	0	0.000
4	G-1432	109	D	2	1	11000	0	0.000
5	G-1473	126	D	2	81	42	13	-0.210
6	G-2409	83	D	3	75	20	5	-0.142
7	G-2410	205	D	3	79	46	6	-0.079
8	G-1597	155	D	3	33	366-	43	-0.060
9	G-2073	157	D	4	25	49	15	-0.477
10	G-2073	157	D	4	30	125	26	-0.328
11	G-2425	203	D	3	34	80	12	-0.236
12	G-2426	91	D	3	27	33	5	-0.035
13	G-1240	197	D	4	41	127	85	-0.275
14	G-1237	190	C	4	5	1244	296	0.740
15	G-2260	23	C	6	2	28	3	-1.000
16	G-2489	3	C	6	2	2300	283	1.000
17	G-2125	57	C	7	55	41	7	-0.475
18	G-2121	180	C	7	4	330	85	0.753
19	G-1344	177	C	7	49	85	75	-0.118
20	G-2123	181	C	7	2	58	3	1.000
21	G-2124	110	C	7	4	23	12	0.044
22	G-2128	60	C	6	49	22	13	-0.200
23	G-2127	189	C	6	58	18	4	-0.069
24	G-2130	59	C	6	57	33	8	-0.137
25	G-2126	168	C	6	1	16	0	0.000
26	G-2122	134	C	7	57	32	8	-0.178
27	G- 854	195	C	5	57	1886	256	0.665
28	G- 515	184	C	7	20	855	71	-0.218
29	G-1343	199	C	6	61	75	17	-0.358
30	G-2091	124	B	5	36	43	8	-0.179
31	G-1211	174	B	4	3	14	4	-0.997
32	G- 820	215	B	5	11	18	6	-0.169
33	G-2054	140	A	2	5	9480	559	0.070
34	G-2062	138	A	2	37	8378	2354	0.161
35	G-2055	180	A	2	33	2391	1205	0.124
36	G-2149	107	A	2	28	137	57	-0.036
37	G-2344	96	A	2	26	34	4	0.046
38	G-2067	44	A	1	1	12	0	0.000
39	G-2063	77	A	1	6	15833	2401	-0.270
40	G-2147	16	A	1	2	34	8	-1.000
41	G-2064	200	A	1	8	6339	6598	0.914
42	G-2277	112	A	2	28	27	6	-0.510
43	G-2254	186	A	2	10	19	8	-0.568
44	G-2060	204	A	2	13	23	19	-0.242
45	G-1272	195	A	2	2	15	10	-1.000
46	G-2257	94	A	2	8	25	5	-0.447
47	G-1228	194	A	2	2	1225	389	1.000
48	G-2256	106	A	2	11	19	10	-0.521
49	G-2259	26	A	2	3	15	4	-0.979

levels were below sea level (i.e. less than 0 feet NGVD), only 41 percent of the readings had chloride concentrations in excess of 1,000 ppm. As shown in Table A-2, the number of wells with high chloride readings decreased with increasing water levels.

Table 2. Lower East Coast Monitoring Well Observations.

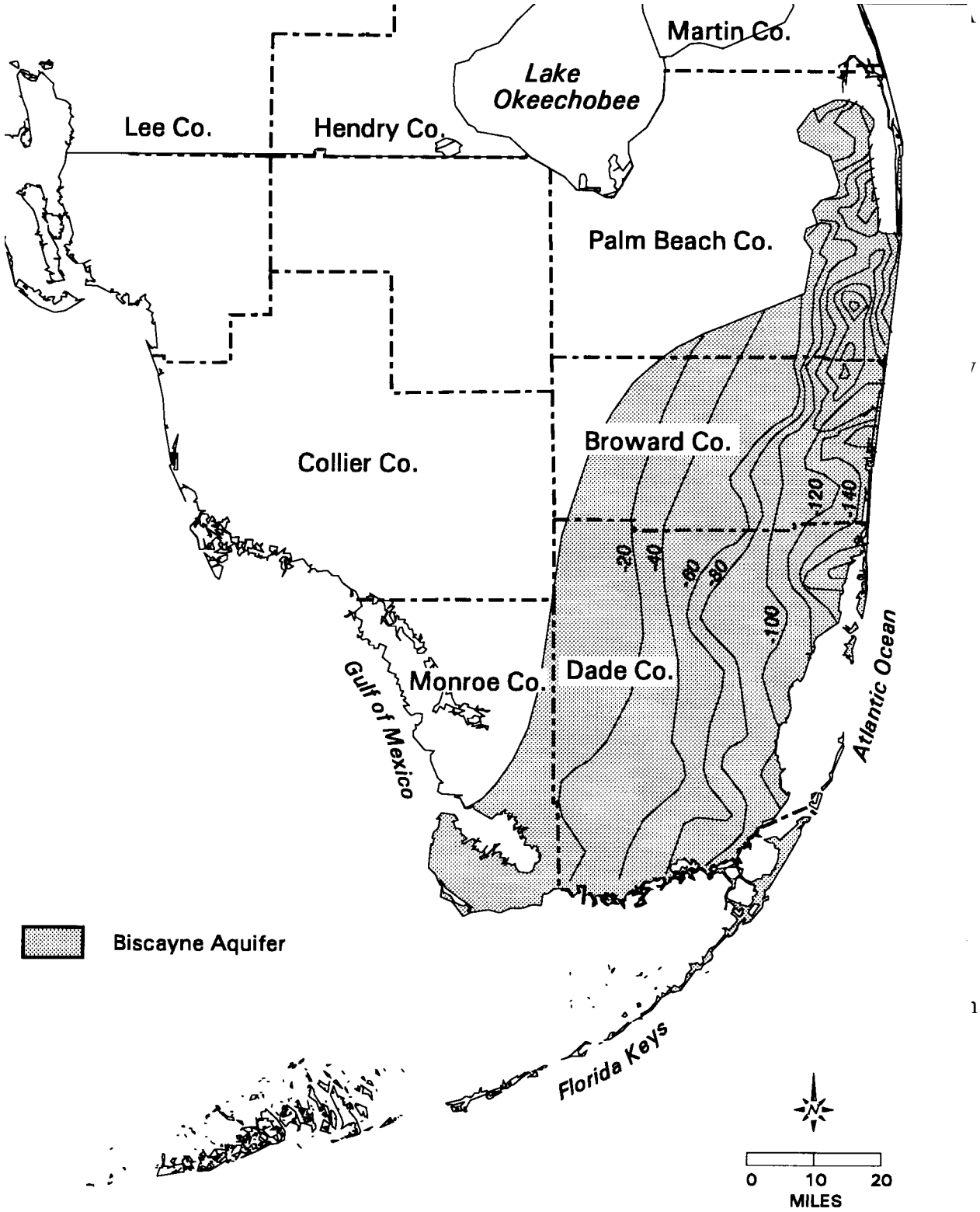
Water level (feet NGVD)	Freshwater Observations	Saltwater Observations	Percent Saline
Less than 0	256	182	41%
Between 0 and 1	994	490	33%
Between 1 and 2	1996	578	22%
Between 2 and 3	1713	455	20%
Between 3 and 4	759	170	18%
Between 4 and 5	410	63	13%
Greater than 5	515	34	6%

It should be noted that some of the monitoring well data may have been influenced by localized pumping or adjacent surface water management systems. These sources may artificially raise or lower the water table compared to non-stressed conditions. However, the results indicate that the strict use of water levels as a criterion for prevention of saltwater intrusion, without considering other factors, could potentially result in inaccurate conclusions.

THEORETICAL VERSUS ACTUAL POSITION OF THE SALTWATER INTERFACE.

For comparison purposes, the theoretical Ghyben-Herzberg (GHR) relationship was analyzed to determine its ability to stabilize the saltwater interface. The GHR takes into account water levels, density differences of saltwater and freshwater and thickness of the aquifer to determine the distance to the saltwater interface. The depth to the base of the Biscayne aquifer in Miami Dade, Broward and Palm Beach Counties was determined from existing hydrogeologic work conducted by Fish (1988), Fish and Stewart (1991), and Shine *et al*. (1989). The depth to the base of the Biscayne aquifer is presented in **Figure A-1.** As shown, the base of the Biscayne aquifer is generally deeper to the north and is thicker along the coast.

Figure 1. Contours at 20-foot intervals showing the depth to the base of the Biscayne aquifer in Dade, Broward and Palm Beach counties.



An average water level potentiometric map was also generated based on available water level data developed from monitoring wells, canal stages (due to their direct connection between the aquifer) and historical information (based on references cited elsewhere in this section). Results are shown in **Figure A-2** and illustrate the impact that various withdrawals and surface water management systems have within the LEC planning area, including general lowering of the water levels along the coast.

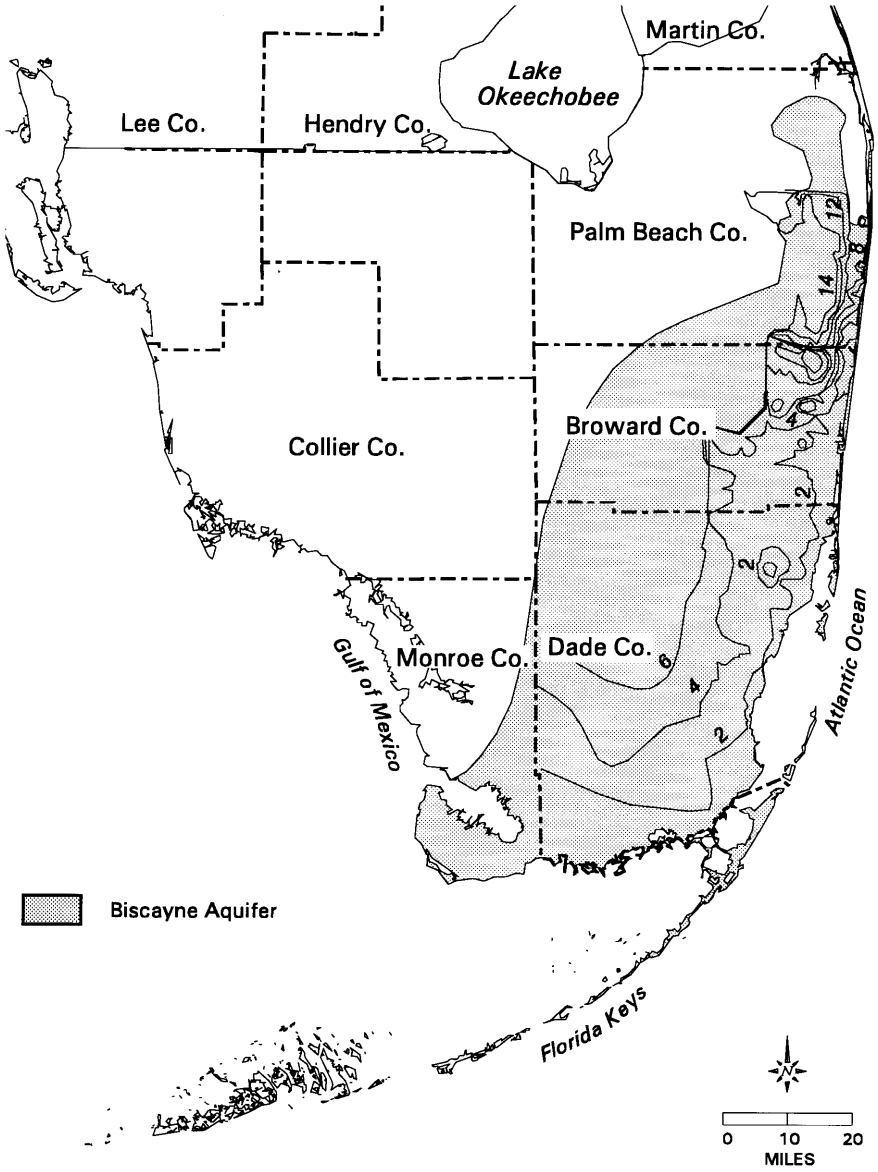


Figure 2. Contours at 2 Foot intervals Showing average water level potentiometric surfaces derived from monitoring well data, canal stages and historical data for the Biscayne Aquifer in Dade, Broward and Palm Beach Counties.

By using the thickness shown on the Biscayne aquifer map (**Figure A-1**) and data from the average water level map (**Figure A-2**), the theoretical position of the saline interface based on the GHR, was calculated as presented in **Figure A-3.** Also superimposed on **Figure A-3**, is the actual position of the saline interface. Results of these analyses indicate that the actual position of the saline interface is seaward of the theoretically calculated GHR location. These data suggest that the GHR provides a relatively conservative estimate of the required freshwater head necessary to stabilize the salt water interface and support Kohout's (1960) work, which reported that up to 20 percent of the saline water that intrudes the Biscayne aquifer is returned to sea along the seepage face.

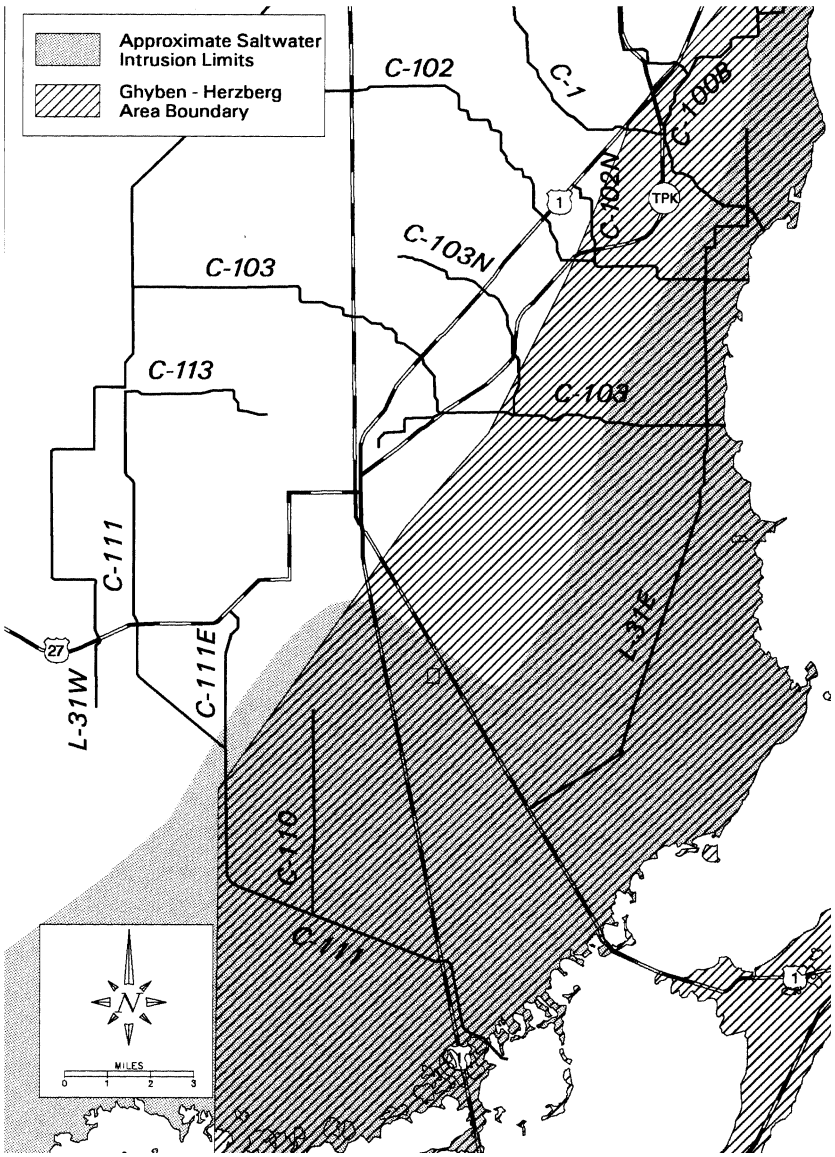


Figure 3. Theoretical position of the saline interface based on the Ghyben-Herzberg relationship in the Biscayne aquifer in Dade, Broward and Palm Beach counties.

Another method used to establish the freshwater/saltwater interface was the review and analysis of chloride and water level data from approximately 200 long-term monitoring wells located within the Lower East Coast planning area. Average dry and wet season water levels and average chloride concentrations were calculated for each well over time and well depths were recorded. Individual data from each monitor well are provided in the following tables of this Appendix. Analyses of these data indicated that when water levels were maintained at, or above the level calculated by the GHR, approximately 95% of those wells showed no significant indication of saltwater intrusion. However, for wells that had water levels below those specified by the GHR, more than 40% experienced some form of salt water intrusion.

These results indicate that the GHR provides estimates of water levels to prevent salt water intrusion that may be too conservative (i.e., more water than necessary may be set aside to protect the aquifer against saltwater intrusion than is absolutely necessary). Therefore, District staff relied upon the statistical evaluation and review of historical water level and water quality data acquired from Lower East Coast monitoring wells and canals as the primary method for establishing minimum water level criteria for the Biscayne aquifer.

MAINTENANCE OF COASTAL CANAL STAGES TO CONTROL SALTWATER INTRUSION.

South Florida Water Management Model

The SFWMD maintains the coastal canal network to provide drainage for agricultural and urbanized areas during rainfall events and recharge local ground water resources during periods of drought. In setting a minimum water level to prevent saltwater intrusion of the Biscayne aquifer, it was necessary to evaluate the effect of the primary canal network on water levels within the Biscayne aquifer. To increase our understanding of this relationship, two separate model simulations were run using the South Florida Water Management Model (SFWMM):

1. In the first simulation, the system was operated under present conditions. Coastal canals were maintained by the regional system during drought periods, and continued to receive water from the WCA system and Lake Okeechobee during low rainfall years.
2. In the second simulation, coastal canals were not maintained for water supply purposes during drought years. District operations incorporated into the model run did not attempt to maintain dry season water levels in the coastal canals.

Results of simulations 1 and 2 above were compared at 20 key monitoring locations. **Table A-3** below provides a summary of these results, including key monitoring locations where groundwater levels were predicted to fall below 1 ft NGVD along the coast..

Table 3: Number of months water levels indicated potential threat of saltwater intrusion along the lower east coast of Florida.

Well Location	Maintained Canal Scenario*	Non-Maintained Canal Scenario*
Florida City	0	44
Taylor Slough	2	9
Homestead	6	13
Cutler Ridge	0	3
Miami	0	2
North Miami	0	2
North Miami Beach	0	1
Hollywood	39	36
Fort Lauderdale	13	30
Ft. Lauderdale Airport	11	13
North Lauderdale	10	23
Pompano Beach	12	13
Deerfield Beach	16	11
Highland Beach	1	171
Boca Raton	38	58
Palm Beach Gardens	165	165
Lake Worth	48	31
Jupiter	31	31

* =Results from South Florida Water Management Model,

Results of these two simulations were compared at 20 key monitoring locations. **Table A-3** provides a summary of these results. When the coastal canals were not maintained during dry periods, there was an increase in the number of days that coastal groundwater levels fell below 1 foot NGVD and the threat of saltwater intrusion significantly increased. When coastal water levels were below 1 ft NGVD for longer periods of time, a reverse gradient developed as coastal aquifer water levels fell near or below sea level. Denser saltwater from the ocean could then move inland into the freshwater portions of the aquifer.

A review of **Table A-3** indicates that water levels did not decrease for all areas along the Lower East Coast as a result of not maintaining the coastal canal structures. In northern Palm Beach County, monitoring wells within the cities of Jupiter and Palm Beach Gardens did not record any change in water levels. This is because the canal network in northern Palm Beach County is not directly connected to the regional system and receives little water from outside

sources other than rainfall. In addition, northern Palm Beach County is outside of the northern extent of the Biscayne aquifer.

In central and southern Palm Beach County, there was a significant increase in the number of times canal water levels fell below 1 ft NGVD in the Boca Raton and Highland Beach areas. This was primarily a result of not maintaining the Lake Worth Drainage District canal network. In contrast, canal water levels appeared to improve in the vicinity of Lake Worth and Deerfield Beach immediately adjacent to the primary tidal discharge structures under the non-maintained canal scenario. This may be a result of increased water levels in the interior storage basins resulting in higher discharges to tide during rainfall events resulting in higher water levels immediately around these discharge structures. However, it appears that all coastal areas of central and southern Palm Beach County are directly influenced by maintained canal levels (**Table A-3**).

In central and northern Broward County, coastal water levels also declined under the non-maintained canal level scenario, indicating that the entire area is influenced by the regional canal network. However, coastal southern Broward County does not appear to be affected by regionally maintained canal levels (**Table A-3).** For example, the Hollywood monitoring area actually showed a slight increase in water levels as a result of not maintaining the canal network. Such increases along the coast of southeastern Broward County may be due to increased seepage flows eastward from Water Conservation Area 3B.

All of Miami Dade County appears to be influenced by the levels maintained in the regional canal network (**Table A-3**). Depressed water levels were noted for coastal areas of Miami Dade County from North Miami Beach southward to Taylor Slough. The largest increase in depressed heads occurred in southern Dade County (as shown in **Table A-3** for Florida City, Taylor Slough and Homestead): where the total number of months that water levels fell below 1 ft NGVD increased from 8 months under the maintained canal scenario to 66 months under the non-maintained canal scenario.

Results of the SFWMM simulations indicate, that for most areas, coastal water levels appear to be highly influenced by water levels in the regional canal network. Water levels in the coastal canals largely govern the expected inland extent of the saline interface. Managing coastal canals at appropriate water levels during drought periods appears to be a viable option for stabilizing the saltwater interface and preventing further inland migration of the saltwater front.

EVALUATION OF COASTAL CANAL STAGES.

Since it appears that the coastal canals help maintain water levels along the lower east coast of Florida, an evaluation of canal stage levels was necessary. Upstream canal water levels from eleven (11) primary canals were obtained from historical records. Daily stages, where available, were obtained from each structure for the period of 1980 to the present. Structures in south Miami Dade County were not included in the evaluation due to the uncertainty associated with developing minimum flows and levels for Biscayne Bay and Florida Bay. Hydrographs and stage duration plots for each structure were developed for the same time frame and are provided in **Appendix B**.

The mean stage (50th percentile) and the 84th percentile stage for each structure are presented in **Table A-4**. The 84th percentile was selected because statistically it represents one standard deviation from the mean. Also included in **Table A-4** is the canal maintenance level utilized by the SFWMM. The levels used in the SFWMM represent the average water level at each structure, during times when water supply deliveries were made, as determined from an evaluation of historical canal stages. When simulated canal stages fall below this level, the SFWMM simulates the importation of water into the canal from the Everglades system or Lake Okeechobee.

Table 4. Stages at Key Water Management Structures Along Florida's Lower East Coast (stages are in feet NGVD).

Canal/Water Management Structure	Mean or 50th percentile Stage (ft NGVD)	84th Percentile[1] (ft NGVD)	Canal Stages Maintained by SFWMD[2] (ft NGVD)
C-51/S-155	8.12	7.74	7.80
C-16/S-41	8.23	7.72	7.80
C-15/S-40	8.39	7.59	7.80
Hillsboro Canal/G-56	7.43	6.75	7.00
C-14/S-37B	6.82	6.60	6.50
C-13/S-36	4.43	4.15	3.80
North New River/G-54	3.68	3.28	3.50
C-9/S-29	2.16	1.90	1.80
C-6/S-26	2.55	2.07	2.00
C-4/S-25B	2.55	1.95	2.20
C-4/S-22	2.86	2.04	2.20

1 = 84th percentile represents one standrad deviation from the mean.

2 = Canal stages maintained by the District at specific canals as simulated by the South Florida Water Management Model.

The model simulation results show a general decline in coastal canal levels maintained by the District from north to south. This is due primarily to the difference in the topography of these two areas. With the exception of the Coastal Ridge, ground level elevations decrease from 15 - 20 ft. NGVD in Palm Beach County, to less than 5 ft. NGVD in parts of southwestern Broward and Miami Dade County. Local canal levels must be maintained below the local ground elevation to prevent urban and agricultural flooding.

Localized Salt Water Intrusion Modeling

The final approach used in this study of saltwater intrusion along the Lower East Coast was the application of an existing saltwater intrusion model to study the position of the saline interface under various simulated conditions. The model code utilized for this approach is the SWICHA model developed by Andersen *et al.* (1986). The SWICHA model is a finite element solute transport/flow model capable of simulating saltwater intrusion in the south Florida area (Andersen *et al*. 1986). The two-dimensional cross sectional model was slightly modified to allow various simulations at idealized transects along the southeast coast of Florida.

Five separate transects along the southeast coast of Florida were simulated. These transects (or slices) through the aquifer, are located in north-central Miami Dade, south Broward, central Broward, northern Broward and south-central Palm Beach counties. Each transect was generally orientated in an east-west direction, with the eastern boundary of the model situated along the coast. Saltwater intrusion modeling was not conducted in south Miami Dade County. Such modeling will need to be done when minimum flows and levels are determined for Biscayne Bay and Florida Bay. Modifications were needed to account for variations in aquifer thickness and transmissivities consistent with the existing two-dimensional cross sectional model at each site (Fish and Stewart 1991; Fish 1988; and Shine *et al.* 1989). The thickness of the model cross-section is equal to the depth to the base of the Biscayne aquifer. Three scenarios were run at steady-state conditions and assumed a constant, effective aquifer recharge rate of six inches per year, to simulate drought conditions (Andersen *et al*. 1986).

Three scenarios were run at each transect to simulate various canal maintenance operations as follows:

1. Setting the minimum canal stage, based on the mean stage or 50th percentile as derived from stage duration curves developed for each canal from the historical data base.
2. Setting the minimum canal stage, based on the 84th percentile derived from stage duration curves developed from the historical data base.
3. For comparison purposes, setting the minimum canal stage, based on the theoretical Ghyben-Herzberg relationship (GHR).

SWICHA Modeling Results

South-Central Palm Beach County Transect:

The first transect is located in south-central Palm Beach County. This idealized cross section assumes a maximum depth of the Biscayne aquifer of 160 ft with a maximum composite transmissivity of 170,000 ft^2/day (Shine *et al.* 1989). The western edge of the model is assumed to be maintained at an elevation similar to the Lake Worth Drainage District (LWDD) E-4 canal. The LWDD E-4 canal is directly connected to the SFWMD C-51 canal and, for this simulation, is assumed to be maintained at an elevation similar to structure S-155 illustrated in **Table A-4**. Thus the three scenarios simulated canal stages at 8.12 ft NGVD, 7.74 ft NGVD, and 5.00 ft NGVD.

The results of the SWICHA model simulations are presented in **Figure A-4**. Results suggest that controlling C-51 at 8.12 ft NGVD or 7.74 ft NGVD shows little difference in the position of the saline interface. This may be due to the fact that water is flowing toward the Lake Worth Lagoon at a rate that is sufficient to minimize movement of the saline interface. However, when the levels in C- 51 are lowered to 5.00 ft NGVD, inland migration of the saline interface was observed. The front appears to have moved an additional 800-1000 ft inland compared to the other two scenarios. Movement of this degree could potentially affect existing coastal wellfields. Both the 8.12 ft and 7.74 ft NGVD canal stages appear to maintain the position of the saline interface. The 5.0 ft level, which was based on the GHR, appears to be unsatisfactory, due to the potential movement of the saline interface and impact on wellfields located near the coast.

Northeastern Broward County Transect:

The second transect is located in northeastern Broward County. This idealized cross section assumes the maximum depth of the Biscayne aquifer to be 200 ft with a composite transmissivity of 120,000 ft^2/day (Fish, 1988). The western edge of the model is assumed to be maintained at an elevation similar to the Hillsboro Canal. The salinity control structure on the Hillsboro Canal is G-56 and the western boundaries are maintained at the elevations specified in Table A-4. Therefore, canal stages that were simulated for each of the three scenarios were 7.43, 6.75, and 5.00 ft NGVD. Model results showed little difference between the position of the saline interface, whether the inland stage was maintained at either the mean, or 84 percentile level (Figure A-4). However, the saltwater front in this instance appears to move inland an additional 600 feet when the GHR level is used as the minimum. Similar to southeastern Palm Beach County, a number of major wellfields are located along the coast in northeastern Broward County that could be jeopardized by additional movement of the saline interface. Therefore, the 5.00 ft NGVD level appears unsatisfactory due to potential movement of the saline interface and possible impacts on existing coastal wellfields.

Central Broward County Transect:

The third transect is located in northeastern Broward County. This idealized cross section is based on the assumption that the Biscayne aquifer has a maximum depth of 160 ft and a composite transmissivity of 170,000 ft/day (Fish, 1988). The western edge of the model is assumed to be maintained at an elevation similar to the North New River Canal. The salinity control structure on the Hillsboro Canal is G-54 and the western boundaries are maintained at the elevations specified in **Table A-4**. Therefore, the three scenarios simulated the canal stages at 3.68, 3.28 ft, and 4.0 ft NGVD.

Figure A-4 also shows results of these three simulations. There is minimal difference between the position of the saline interface when either the mean stage or the GHR stage is used, even though these two stages differed by 0.32 ft. However, when canal levels are simulated at a maintained stage of 3.28 ft, the saline interface moves several hundred feet inland in contrast to the other two scenarios. These results suggest that little benefit can be anticipated by increasing the canal stage from 3.68 ft to 4.00 ft. However, lowering the canal stage from 3.68 to 3.28 ft may cause significant movement of the saline interface.

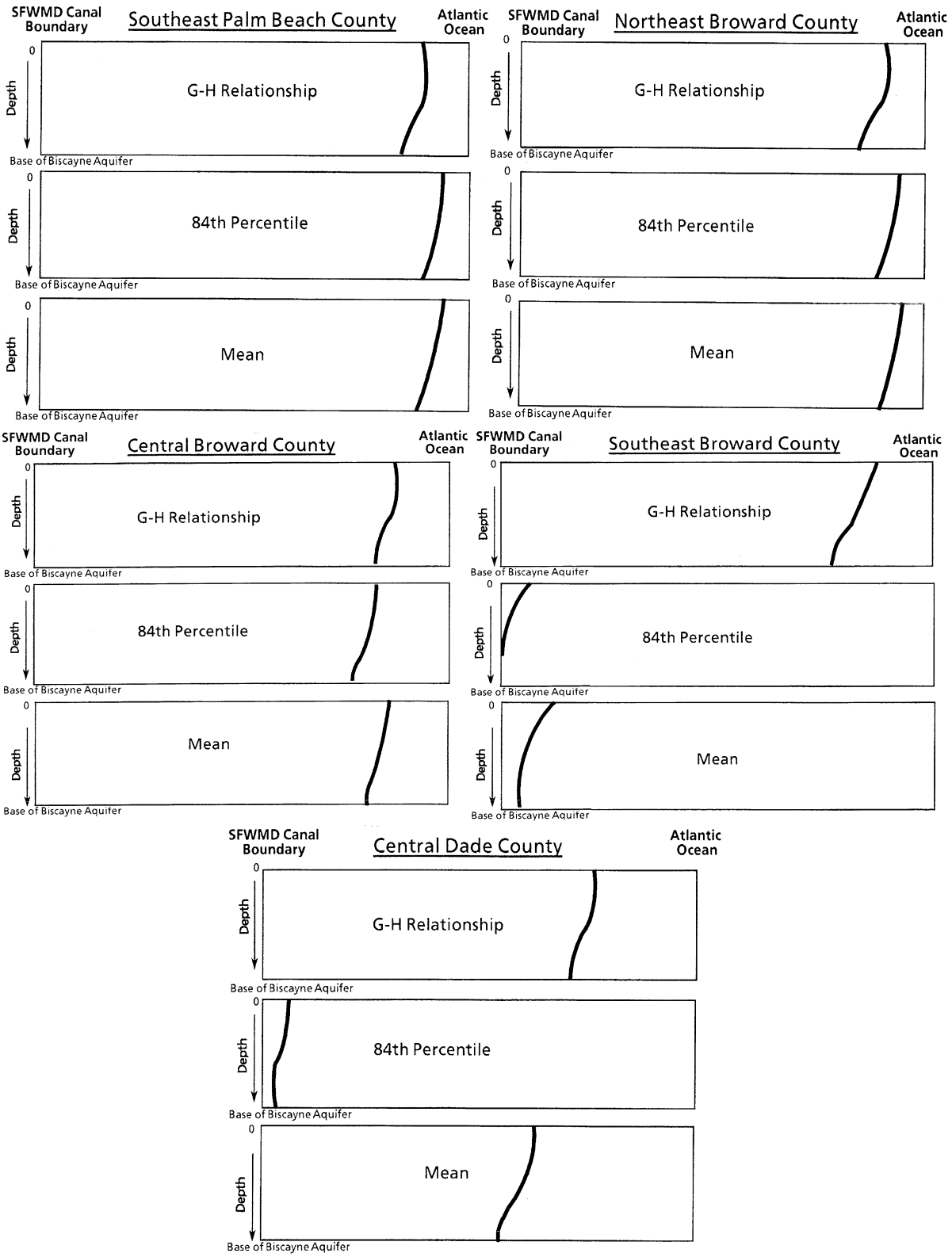


Figure 4. Simulated position of the saline interface when stages in the coastal canals are maintained the mean, 84th percentile and calculated Ghyben-Herzber relationship water levels.

Southeastern Broward County Transect:

The fourth transect is located in southeastern Broward County. This idealized cross section assumes an aquifer thickness of 200 ft with a composite transmissivity of 170,000 ft^2/day (Andersen *et al.* 1986). The western edge of the model is assumed to be maintained at an elevation similar to the C-9 Canal. The salinity control structure on the C-9 Canal is S-29 and the western boundaries are maintained at elevations shown in **Table A-4**. Therefore, the three scenarios simulated maintenance of canal stages at 2.16, 1.90, and 4.00 ft NGVD. These results are presented in **Figure A-4**. The model failed to properly converge when the western boundary was maintained at 2.16 ft and 1.90 ft NGVD. This indicates that the salt water front may not be stable under existing conditions. The results of an unstable interface are supported by the monitoring data in the area which shows continued inland migration of the saline interface. The results suggest that the saltwater front could be stabilized if a mound of freshwater, approximately 4.00 ft deep, could be created along the coast. However, it may not be feasible to use the C-9 canal to maintain such a level due to the potential for flooding in southern Broward and Northern Dade County.

North-Central Dade County Transect:

The final transect is located in north-central Dade County. This idealized cross section assumes a Biscayne aquifer thickness of 140 ft with a composite transmissivity of 1,000,000 ft^2/ day (Fish and Stewart, 1991). The western edge of the model is assumed to be maintained at an elevation similar to the Miami Canal. The salinity control structure on the Tamiami Canal is S-25B and the western boundaries are maintained at the elevations specified in **Table A-4**. Therefore, the three scenarios simulated maintenance of minimum canal stages of 2.55 ft, 1.95 ft, and 3.20 ft NGVD at S-25.

The three SWICHA model simulations for Dade County presented in **Figure A-4**, once again indicate that model predictions fail to properly converge when stages are maintained at 1.95 ft NGVD along the western boundary resulting in an unstable saltwater front. However, the front appears to be stabilized in approximately the same position when the western boundary is maintained at either 2.55 ft or 3.25 ft. Results of this simulation confirm Andersen's (1986) observation that changes in head of even a few tenths of a foot may have widespread implications on the position of the saline interface within the Biscayne aquifer.

Results of these three model simulations showed historical canal water levels to range between the mean (50th percentile) and one standard deviation from the mean (84th percentile) for each of the five transects modeled. These results show that maintenance of canal levels within these ranges are the most appropriate for preventing further movement of the saline interface without adversely affecting flood control. These data represent the closest fit for establishing minimum flows and levels for each of the five transects modeled. Based on a review of these modeling results, proposed minimum levels for each of the District's eleven primary water management structures are presented in **Table 8** in the main body of this report**.**

SURFACE AND GROUNDWATER FLOWS IN SOUTH DADE COUNTY, FLORIDA.

The situation in South Miami Dade County is highly complex. Historically, ground water flowed eastward and discharged into Biscayne Bay, while surface waters generally flowed southward towards the eastern Everglades, eventually reaching Florida Bay, Barnes Sound and Card Sound. With subsequent draining of South Miami Dade County, both surface and ground water flows to Biscayne Bay were significantly altered (Buchanan and Klein. 1976). Ground water and surface water flows toward northeastern Florida Bay also appear to have been altered, although additional work is needed to determine the extent. In addition to drainage, salinity regimes and circulation patterns in Florida Bay and Barnes Sound appear to have been modified by the construction of Flagler's Florida Keys Railroad (McIvor, *et al*., 1994).

A secondary problem in southern Miami Dade County is the relatively thin soil. Due to these shallow soils, canals are cut into the oolitic and bryozoan facies of the Miami Limestone and have penetrated into the Fort Thompson Formation in some areas. As a result, these canals are directly connected to some of the most permeable sections of the Biscayne aquifer. It is therefore difficult to maintain canal stages for extended periods of time without using a significant volume of water from regional storage.

For the reasons discussed above, this report will not establish minimum flows and levels for Florida Bay, Biscayne Bay, Card Sound, and Barnes Sound, located in southern Miami Dade County. Results of this study and others show that a strong relationship exists between the position of the saltwater interface and the volume of ground water that flows into these important estuaries. However, District staff is concerned that setting a minimum level for the Biscayne aquifer in South Miami Dade County, based solely on maintaining the existing position of the saline interface has the potential to restrict critical ground water and surface flows that move east towards Biscayne Bay and south towards Florida Bay. Setting a MFL for southern Miami Dade County based solely on this information could result in unsatisfactory ground water and surface water flows to these estuaries. Therefore, it is recommended that the MFL for the Biscayne aquifer in southern Miami Dade County be developed concurrently with the development of MFLs for Biscayne Bay, Florida Bay, Card Sound and Barnes Sound.

Table 5. Data from Individual Biscayne Aquifer Monitoring Wells

Well ID	Dry season avg.water level (ft)	Wet season avg.water level (ft)	Initial Chloride (ppm)	Latest Chloride (ppm)	Avg. Chloride (ppm)	Well Depth (ft)	Dry Season Protection Criterion	Wet Season Protection Criterion
G 515	0.93	1.38	770.00	920.00	843.85	211	-4.35	-3.89
G 820	1.31	2.99	18.00	5.00	11.34	224	-4.29	-2.61
G 820A	3.67	5.23	4.40	5.00	4.70	102	1.12	2.68
G 854	2.66	3.11	1600.00	2100.00	1939.66	206	-2.49	-2.04
G1211	0.00	0.00	18.00	18.00	18.75	1	0.00	0.00
G1212	2.46	3.64	82.00	34.00	40.29	1	2.44	3.61
G1212A	2.19	2.82	28.00	21.00	33.05	83	0.11	0.75
G1228	2.02	2.82	2100.00	1400.00	1360.00	194	-2.83	-2.03
G1232	2.56	3.59	16.00	28.00	21.42	205	-2.57	-1.54
G1237	0.80	1.92	1000.00	1200.00	1212.00	200	-4.20	-3.08
G1240	1.28	1.65	240.00	200.00	124.85	197	-3.64	-3.27
G1241	2.27	2.99	58.00	3100.00	913.25	215	-3.11	-2.38
G1272	1.16	3.00	13.00	34.00	20.24	198	-3.79	-1.95
G1272A	0.00	0.00	25.00	27.00	25.67	59	0.00	0.00
G1340	2.17	3.08	50.00	34.00	39.80	217	-3.25	-2.34
G1343	1.89	2.73	64.00	88.00	76.45	210	-3.36	-2.52
G1344	1.32	1.70	250.00	80.00	88.68	182	-3.23	-2.85
G1347	0.34	1.21	40.00	34.00	38.52	200	-4.66	-3.79
G1432	0.00	0.00	11000.00	11000.00	11167.61	1	0.00	0.00
G1433	-0.03	-0.04	1200.00	12000.00	8709.30	150	-3.78	-3.79
G1434	-0.13	0.03	7100.00	10000.00	8691.67	192	-4.93	-4.77
G1435	0.59	1.40	42.00	7400.00	3526.10	204	-4.51	-3.70
G1446	0.00	0.00	2200.00	8600.00	7875.00	1	0.00	0.00
G1472	0.00	1.51	42.00	42.00	42.00	18	0.00	0.00
G1473	1.21	1.72	36.00	46.00	41.26	132	-2.09	-1.58
G1548	1.66	2.30	650.00	580.00	618.98	187	-3.01	-2.38
G1549	0.00	0.00	28.00	68.00	50.76	184	0.00	0.00
G1597	1.22	1.72	410.00	260.00	355.04	163	-2.85	-2.35
G2000	1.66	2.34	800.00	620.00	722.04	192	-3.14	-2.46
G2001	2.24	3.80	320.00	410.00	360.26	54	0.89	2.45
G2038	1.27	2.16	34.00	37.00	35.50	143	-2.30	-1.42
G2039	1.24	1.76	32.00	51.00	37.25	1	1.22	1.74
G2040	1.18	2.19	120.00	92.00	64.07	177	-3.24	-2.23
G2053	0.00	0.00	4800.00	3700.00	4500.00	1	0.00	0.00
G2054	2.79	2.94	9700.00	11000.00	9708.82	142	-0.76	-0.61
G2055	2.53	3.47	40.00	4300.00	2520.61	180	-1.97	-1.03
G2055A	0.00	0.00	9700.00	4500.00	8954.32	1	0.00	0.00
G2060	-1.97	0.22	14.00	5.00	30.07	211	-7.24	-5.05
G2062	0.66	1.09	9700.00	4900.00	8224.10	139	-2.81	-2.38
G2063	0.10	0.49	15000.00	16000.00	16633.80	82	-1.95	-1.56
G2064	0.75	1.70	1700.00	12000.00	11461.32	201	-4.27	-3.32
G2067	1.41	3.13	12.00	12.00	12.00	45	0.29	2.01
G2073	1.35	1.77	110.00	140.00	121.95	190	-3.40	-2.98
G2073A	1.43	1.95	68.00	48.00	42.55	157	-2.49	-1.98
G2074	0.22	1.32	6600.00	11000.00	9473.59	168	-3.98	-2.88
G2090	2.87	3.86	22.00	32.00	39.98	101	0.34	1.34
G2091	1.81	2.35	44.00	54.00	43.11	124	-1.29	-0.75
G2121	0.00	0.00	330.00	300.00	292.07	185	0.00	0.00
G2122	1.35	2.01	38.00	34.00	31.81	135	-2.03	-1.36
G2123	0.00	3.90	58.00	36.00	51.64	182	0.00	0.00
G2124	0.00	0.00	40.00	36.00	24.22	1	0.00	0.00
G2125	1.73	2.28	42.00	32.00	38.70	58	0.28	0.83
G2126	0.00	0.00	18.00	28.00	20.91	169	0.00	0.00
G2127	1.12	1.52	24.00	18.00	21.53	190	-3.63	-3.23
G2128	1.12	1.47	70.00	8.00	35.53	61	-0.41	-0.06
G2129	1.38	1.99	18.00	12.00	13.92	180	-3.12	-2.51
G2130	1.19	1.79	34.00	26.00	31.84	60	-0.31	0.29
G2147	1.39	0.00	40.00	28.00	34.00	16	0.99	-0.40
G2149	1.99	2.82	18.00	310.00	145.23	137	-1.43	-0.60
G2156	11.97	13.00	21.00	19.00	17.00	100	9.47	10.50
G2160	0.00	0.00	17.00	25.00	23.80	145	0.00	0.00
G2160A	0.00	0.00	5.70	15.00	8.80	53	0.00	0.00
G2161	0.00	0.00	83.00	80.00	81.33	200	0.00	0.00
G2161A	0.00	0.00	3.00	8.00	4.50	55	0.00	0.00
G2176	1.58	2.23	190.00	470.00	186.37	171	-2.70	-2.04

*Average Dry season water level minus theoretical head necessary to prevent saltwater intrusion
† Average Wet season water level minus theoretical head necessary to prevent saltwater intrusion

Table 5 (Continued) Data from Individual Biscayne Aquifer Monitoring Wells

Well ID	Dry season avg.water level (ft)	Wet season avg.water level (ft)	Initial Chloride (ppm)	Latest Chloride (ppm)	Avg. Chloride (ppm)	Well Depth (ft)	Dry Season Protection Criterion	Wet Season Protection Criterion
G2176A	1.57	2.22	36.00	32.00	32.30	63	-0.01	0.64
G2180	1.52	2.30	180.00	170.00	177.14	106	-1.13	-0.35
G2199	0.00	0.00	89.00	89.00	89.00	42	0.00	0.00
G2201	0.00	0.00	69.00	69.00	69.00	41	0.00	0.00
G2254	2.38	4.99	18.00	20.00	18.45	1	2.35	4.97
G2255	0.00	2.65	7100.00	17000.00	14118.18	203	0.00	0.00
G2256	2.17	3.32	14.00	48.00	27.62	110	-0.58	0.57
G2257	1.65	3.34	18.00	52.00	28.38	94	-0.70	0.99
G2259	2.38	3.26	10.00	16.00	13.20	26	1.73	2.61
G2260	0.00	0.00	28.00	13.00	22.20	1	0.00	0.00
G2261	0.00	0.00	140.00	110.00	146.67	1	0.00	0.00
G2262	0.00	0.00	1300.00	1400.00	1320.00	1	0.00	0.00
G2263	0.00	0.00	21.00	960.00	262.75	1	0.00	0.00
G2264	0.00	0.00	40.00	39.00	39.18	1	0.00	0.00
G2265	0.00	0.00	240.00	38.00	232.00	1	0.00	0.00
G2266	0.00	0.00	46.00	8.00	36.50	1	0.00	0.00
G2267	0.00	0.00	42.00	54.00	48.00	1	0.00	0.00
G2268	0.00	0.00	42.00	48.00	35.62	168	0.00	0.00
G2269	0.00	0.00	38.00	38.00	41.11	50	0.00	0.00
G2270	0.00	0.00	70.00	64.00	73.12	184	0.00	0.00
G2274	3.65	5.74	19.00	21.00	20.00	130	0.40	2.49
G2274A	4.55	6.57	19.00	19.00	19.00	57	3.13	5.15
G2275	3.63	5.30	12.00	10.00	12.00	157	-0.29	1.37
G2276	0.00	0.00	18.00	40.00	119.63	200	0.00	0.00
G2277	2.44	3.91	24.00	30.00	29.67	131	-0.84	0.64
G2278	3.00	4.29	24.00	28.00	20.50	203	-2.07	-0.78
G2281	0.00	0.00	79.00	79.00	79.00	40	0.00	0.00
G2283	0.00	0.00	69.00	69.00	69.00	40	0.00	0.00
G2285	0.00	0.00	66.00	66.00	66.00	40	0.00	0.00
G2294	1.08	1.83	56.00	98.00	103.83	135	-2.29	-1.54
G2295	0.00	0.00	10.00	64.00	27.34	1	0.00	0.00
G2296	0.00	0.00	23000.00	19000.00	21000.00	1	0.00	0.00
G2311	0.00	0.00	95.00	910.00	555.68	1	0.00	0.00
G2312	0.00	0.00	150.00	320.00	174.24	1	0.00	0.00
G2313	0.00	0.00	130.00	1700.00	719.64	1	0.00	0.00
G2314	0.00	0.00	38.00	800.00	267.30	1	0.00	0.00
G2315	0.00	0.00	140.00	1700.00	845.00	1	0.00	0.00
G2316	0.00	0.00	73.00	680.00	209.11	1	0.00	0.00
G2317	0.00	0.00	100.00	74.00	88.44	1	0.00	0.00
G2318	0.00	0.00	64.00	100.00	77.15	1	0.00	0.00
G2319	0.00	0.00	110.00	720.00	410.10	1	0.00	0.00
G2320	0.00	0.00	58.00	550.00	271.00	1	0.00	0.00
G2321	0.00	0.00	130.00	260.00	142.00	1	0.00	0.00
G2322	0.00	0.00	130.00	350.00	141.50	1	0.00	0.00
G2323	0.00	0.00	140.00	320.00	147.87	1	0.00	0.00
G2325	0.00	0.00	90.00	120.00	26.62	1	0.00	0.00
G2327	0.00	0.00	18.00	900.00	330.17	1	0.00	0.00
G2328	0.00	0.00	39.00	220.00	89.21	1	0.00	0.00
G2329	0.00	0.00	130.00	140.00	133.33	1	0.00	0.00
G2330	0.00	0.00	62.00	450.00	294.80	1	0.00	0.00
G2338	0.00	0.00	58.00	200.00	183.45	1	0.00	0.00
G2340	0.00	0.00	100.00	300.00	195.20	1	0.00	0.00
G2341	0.00	0.00	150.00	500.00	151.67	1	0.00	0.00
G2342	0.00	0.00	35.00	140.00	79.18	1	0.00	0.00
G2344	0.00	0.00	26.00	70.00	26.38	1	0.00	0.00
G2344A	0.83	1.96	26.00	28.00	30.78	93	-1.49	-0.36
G2344B	-0.02	2.75	8.00	8.00	8.00	52	-1.32	1.45
G2345	0.00	0.00	35.00	530.00	88.38	103	0.00	0.00
G2345X	0.00	0.00	27.00	32.00	28.17	103	0.00	0.00
G2346	0.00	0.00	120.00	240.00	234.29	1	0.00	0.00
G2347	0.00	0.00	40.00	8300.00	5425.05	1	0.00	0.00
G2348	0.00	0.00	44.00	1500.00	390.80	122	0.00	0.00
G2349	0.00	0.00	76.00	10000.00	2796.57	136	0.00	0.00
G2350	0.00	0.00	44.00	1400.00	254.17	171	0.00	0.00
G2351A	-0.44	-0.43	46.00	9300.00	6712.86	1	-0.46	-0.45
G2352	0.00	1.87	32.00	310.00	273.56	1	0.00	0.00

*Average Dry season water level minus theoretical head necessary to prevent saltwater intrusion
† Average Wet season water level minus theoretical head necessary to prevent saltwater intrusion

Table 5 (Continued). Data from Individual Biscayne Aquifer Monitoring Wells

Well ID	Dry season avg.water level (ft)	Wet season avg.water level (ft)	Initial Chloride (ppm)	Latest Chloride (ppm)	Avg. Chloride (ppm)	Well Depth (ft)	Dry Season Protection Criterion	Wet Season Protection Criterion
G2353	0.00	0.00	28.00	1500.00	489.00	237	0.00	0.00
G2354	0.00	0.00	41.00	550.00	148.10	231	0.00	0.00
G2355	0.00	0.00	73.00	73.00	73.00	96	0.00	0.00
G2355A	0.00	0.00	140.00	140.00	140.00	53	0.00	0.00
G2356	0.00	0.00	55.00	59.00	57.67	96	0.00	0.00
G2356A	0.00	0.00	49.00	60.00	54.00	56	0.00	0.00
G2357	0.00	0.00	77.00	76.00	76.67	83	0.00	0.00
G2357A	0.00	0.00	75.00	73.00	75.67	56	0.00	0.00
G2358	0.00	0.00	80.00	78.00	78.33	100	0.00	0.00
G2358A	0.00	0.00	100.00	110.00	110.00	49	0.00	0.00
G2359	5.74	5.97	28.00	29.00	28.67	101	3.22	3.44
G2359A	5.77	5.95	28.00	27.00	26.67	59	4.29	4.47
G2360	0.00	0.00	18.00	18.00	17.67	100	0.00	0.00
G2360A	0.00	0.00	4.00	4.00	4.00	51	0.00	0.00
G2361	4.97	5.01	39.00	42.00	41.33	82	2.92	2.96
G2361A	5.04	5.05	24.00	27.00	26.00	45	3.92	3.92
G2362	0.00	0.00	110.00	110.00	106.67	61	0.00	0.00
G2362A	0.00	0.00	110.00	110.00	106.67	24	0.00	0.00
G2363	0.00	0.00	25.00	21.00	23.00	80	0.00	0.00
G2363A	0.00	0.00	28.00	40.00	34.33	20	0.00	0.00
G2364	0.00	0.00	37.00	39.00	35.33	80	0.00	0.00
G2364A	0.00	0.00	9.00	9.00	9.00	19	0.00	0.00
G2365	0.00	0.00	24.00	57.00	46.67	74	0.00	0.00
G2365A	0.00	0.00	28.00	23.00	26.25	35	0.00	0.00
G2365B	0.00	0.00	16.00	19.00	16.33	1	0.00	0.00
G2366	0.00	0.00	47.00	54.00	52.00	57	0.00	0.00
G2366A	0.00	0.00	57.00	49.00	53.00	28	0.00	0.00
G2367	0.00	0.00	100.00	100.00	99.67	65	0.00	0.00
G2367A	0.00	0.00	98.00	92.00	95.00	25	0.00	0.00
G2368A	0.00	0.00	5.00	7.40	6.20	11	0.00	0.00
G2369	0.00	0.00	21.00	20.00	20.33	75	0.00	0.00
G2369A	0.00	0.00	17.00	23.00	20.00	22	0.00	0.00
G2370	-1.24	0.57	38.00	37.00	38.00	101	-3.77	-1.96
G2370A	-0.86	0.85	11.00	10.00	12.67	51	-2.13	-0.42
G2371	0.00	0.00	50.00	50.00	50.00	80	0.00	0.00
G2371A	0.00	0.00	43.00	43.00	43.00	14	0.00	0.00
G2372	0.00	0.00	58.00	58.00	58.00	105	0.00	0.00
G2372A	0.00	0.00	14.00	14.00	14.00	32	0.00	0.00
G2373	0.00	0.00	120.00	120.00	120.00	60	0.00	0.00
G2373A	0.00	0.00	120.00	120.00	120.00	21	0.00	0.00
G2374	0.00	0.00	31.00	31.00	31.00	93	0.00	0.00
G2374A	0.00	0.00	10.00	10.00	10.00	34	0.00	0.00
G2385	0.00	0.00	41.00	43.00	43.00	1	0.00	0.00
G2385A	0.00	0.00	43.00	41.00	42.00	1	0.00	0.00
G2386A	0.00	0.00	15.00	130.00	104.75	1	0.00	0.00
G2386B	0.00	0.00	93.00	140.00	110.88	1	0.00	0.00
G2386C	0.00	0.00	110.00	140.00	112.12	1	0.00	0.00
G2386D	0.00	0.00	7.80	7.00	11.98	1	0.00	0.00
G2386E	0.00	0.00	40.00	17.00	30.44	1	0.00	0.00
G2386F	0.00	0.00	95.00	22.00	42.25	1	0.00	0.00
G2386G	0.00	0.00	6.00	9.00	11.30	1	0.00	0.00
G2386H	0.00	0.00	33.00	7.00	15.64	1	0.00	0.00
G2386I	0.00	0.00	35.00	9.00	21.50	1	0.00	0.00
G2386J	0.00	0.00	68.00	73.00	69.67	1	0.00	0.00
G2386K	0.00	0.00	98.00	91.00	95.67	1	0.00	0.00
G2386L	0.00	0.00	7.60	6.20	5.80	1	0.00	0.00
G2386M	0.00	0.00	3.20	2.00	2.53	1	0.00	0.00
G2386N	0.00	0.00	64.00	68.00	65.33	1	0.00	0.00
G2386O	0.00	0.00	68.00	62.00	62.00	1	0.00	0.00
G2386P	0.00	0.00	23.00	11.00	19.00	1	0.00	0.00
G2387A	0.00	0.00	93.00	95.00	84.67	1	0.00	0.00
G2387B	0.00	0.00	84.00	94.00	83.33	1	0.00	0.00
G2387C	0.00	0.00	97.00	100.00	101.75	1	0.00	0.00
G2387D	0.00	0.00	87.00	83.00	83.33	1	0.00	0.00
G2387E	0.00	0.00	77.00	90.00	78.25	1	0.00	0.00
G2387F	0.00	0.00	220.00	140.00	190.00	1	0.00	0.00

*Average Dry season water level minus theoretical head necessary to prevent saltwater intrusion

† Average Wet season water level minus theoretical head necessary to prevent saltwater intrusion

Table 5 (Continued). Data from Individual Biscayne Aquifer Monitoring Wells

Well ID	Dry season avg.water level (ft)	Wet season avg.water level (ft)	Initial Chloride (ppm)	Latest Chloride (ppm)	Avg. Chloride (ppm)	Well Depth (ft)	Dry Season Protection Criterion	Wet Season Protection Criterion
G2408	1.30	1.83	56.00	56.00	56.00	1	1.27	1.80
G2409	1.19	1.78	48.00	34.00	20.50	83	-0.89	-0.30
G2410	1.27	1.88	46.00	350.00	68.74	205	-3.86	-3.25
G2419	0.00	0.00	110.00	140.00	123.33	1	0.00	0.00
G2420	0.00	0.00	130.00	130.00	126.67	1	0.00	0.00
G2421	0.00	0.00	140.00	120.00	130.00	1	0.00	0.00
G2422	0.00	0.00	110.00	140.00	86.20	1	0.00	0.00
G2423	0.00	0.00	140.00	120.00	130.00	1	0.00	0.00
G2424	0.00	0.00	120.00	120.00	116.67	1	0.00	0.00
G2425	1.46	1.98	24.00	26.00	70.78	203	-3.61	-3.09
G2426	1.53	2.01	30.00	74.00	35.56	91	-0.74	-0.26
G2441	0.00	2.21	34.00	210.00	267.41	181	0.00	0.00
G2445	0.00	0.00	64.00	320.00	216.74	132	0.00	0.00
G2447	0.00	0.00	26.00	58.00	52.51	135	0.00	0.00
G2477	1.77	2.38	34.00	36.00	37.92	75	-0.11	0.51
G2478	1.69	2.33	40.00	68.00	54.30	195	-3.19	-2.54
G2480	2.45	3.79	46.00	60.00	67.86	102	-0.10	1.24
G2487	0.00	0.00	4400.00	6500.00	3827.50	3	0.00	0.00
G2488	0.00	0.00	7500.00	6300.00	4348.00	1	0.00	0.00
G2489	1.25	0.00	2500.00	4100.00	2900.00	1	1.23	-0.03
G2490	0.00	0.00	1400.00	1500.00	1625.00	4	0.00	0.00
G2491	0.00	0.00	2000.00	4600.00	2522.00	3	0.00	0.00
G2492	0.00	0.00	37.00	32.00	30.00	8	0.00	0.00
G2493	0.00	0.00	62.00	60.00	62.50	11	0.00	0.00
G2494	0.00	0.00	940.00	80.00	663.33	15	0.00	0.00
G2509	2.12	2.45	47.00	68.00	81.00	1	2.10	2.43
G2516	0.00	0.00	42.00	42.00	42.00	1	0.00	0.00
G2523	0.00	0.00	52.00	48.00	43.00	1	0.00	0.00
G2612	0.00	0.57	28.00	120.00	169.69	273	0.00	0.00
G2614	0.00	0.00	360.00	64.00	231.00	50	0.00	0.00
G2615	0.00	0.00	44.00	660.00	665.92	175	0.00	0.00
G2616	0.00	0.00	40.00	300.00	100.24	1	0.00	0.00
G2617	59.19	58.91	1100.00	1100.00	1120.00	1	59.16	58.89
G2618	58.83	59.61	600.00	630.00	622.86	1	58.81	59.58
G2619	59.63	59.52	1100.00	1100.00	1122.22	1	59.60	59.50
G2620	58.04	58.01	1400.00	1500.00	1533.33	1	58.02	57.99
G2621	0.00	0.00	330.00	4200.00	2977.69	300	0.00	0.00
G2704	3.78	-1.53	40.00	40.00	40.00	1	3.75	-1.55
G2708	8.46	8.78	14.00	14.00	14.00	1	8.44	8.76
G2711	3.76	4.40	52.00	52.00	52.00	10	3.51	4.15
G2712	4.28	4.72	18.00	18.00	18.00	10	4.03	4.47
G2713	6.83	6.99	16.00	16.00	16.00	1	6.80	6.97
G2716	2.50	3.28	16.00	16.00	16.00	10	2.25	3.03
G2718	3.36	3.66	32.00	32.00	32.00	150	-0.39	-0.09
G2719	4.44	5.14	34.00	34.00	34.00	55	3.07	3.77
G2721	8.32	8.30	22.00	22.00	22.00	1	8.29	8.27
G2722	9.49	9.63	40.00	40.00	40.00	1	9.47	9.61
G2723	2.96	2.04	12.00	12.00	12.00	1	2.93	2.02
G2724	3.71	4.04	18.00	18.00	18.00	174	-0.64	-0.31
G2725	2.71	2.90	260.00	160.00	178.00	170	-1.54	-1.35
G2726	8.64	8.83	18.00	18.00	18.00	1	8.61	8.81
G2728	2.90	3.21	54.00	54.00	54.00	20	2.40	2.71
G2729	2.60	2.94	34.00	34.00	34.00	156	-1.30	-0.96
G2730	2.13	2.67	8600.00	7100.00	7850.00	162	-1.92	-1.38
G2731	2.64	2.87	10.00	10.00	10.00	170	-1.61	-1.38
G2732	3.40	2.73	16.00	34.00	28.80	1	3.38	2.71
G2733	3.10	3.37	16.00	34.00	28.80	100	0.60	0.87
G2735	3.63	3.85	24.00	24.00	24.00	150	-0.12	0.10
G2737	2.50	2.93	190.00	270.00	272.50	150	-1.25	-0.82
G2738	4.23	4.82	30.00	30.00	30.00	1	4.20	4.80
G2807	0.00	2.01	38.00	34.00	39.00	1	0.00	0.00
G2852	9.01	9.18	35.00	40.00	41.50	130	5.76	5.93
G1352	-0.01	2.70	210.00	210.00	210.00	160	-4.01	-1.30
S 830	0.00	0.00	3800.00	2400.00	2781.25	1	0.00	0.00
S1414	0.00	0.00	80.00	52.00	72.67	1	0.00	0.00
S1488	0.00	0.00	44.00	38.00	42.00	1	0.00	0.00

*Average Dry season water level minus theoretical head necessary to prevent saltwater intrusion
† Average Wet season water level minus theoretical head necessary to prevent saltwater intrusion

Table 5 (Continued). Data from Individual Biscayne Aquifer Monitoring Wells

Well ID	Dry season avg.water level (ft)	Wet season avg.water level (ft)	Initial Chloride (ppm)	Latest Chloride (ppm)	Avg. Chloride (ppm)	Well Depth (ft)	Dry Season Protection Criterion	Wet Season Protection Criterion
S1489	0.00	0.00	36.00	36.00	35.00	1	0.00	0.00
S2003	0.00	0.00	71.00	71.00	71.00	1	0.00	0.00
S1533M	0.00	0.00	7100.00	7100.00	7100.00	1	0.00	0.00
F 2A	1.92	3.18	350.00	92.00	208.20	1	1.90	3.16
F 5	0.46	1.53	150.00	170.00	142.00	1	0.44	1.50
F 45	2.09	2.62	140.00	170.00	135.81	85	-0.04	0.49
F 214	2.12	2.73	94.00	24.00	73.44	1	2.09	2.71
F 237A	0.00	0.00	400.00	160.00	294.55	1	0.00	0.00
F 279	1.69	1.83	1400.00	2800.00	1900.00	117	-1.24	-1.10
F 297	0.00	0.00	1700.00	1700.00	1700.00	1	0.00	0.00
F 298	0.00	0.00	1300.00	1400.00	1350.00	1	0.00	0.00
F 390	0.00	0.00	280.00	200.00	234.44	1	0.00	0.00
F 414	0.13	1.36	32.00	28.00	35.62	65	-1.50	-0.26
F 441	0.65	1.64	50.00	28.00	47.13	57	-0.77	0.21
F 481	1.26	1.59	360.00	260.00	310.00	1	1.24	1.57
F 483	1.70	2.01	120.00	66.00	91.12	1	1.67	1.99
G 354	3.89	4.62	640.00	90.00	131.86	90	1.64	2.37
G 355	1.74	2.03	310.00	100.00	202.00	83	-0.34	-0.04
G 430	0.00	3.73	44.00	32.00	34.86	98	0.00	0.00
G 432	1.18	1.75	32.00	2000.00	1145.42	100	-1.32	-0.75
G 548	1.47	1.87	490.00	100.00	210.72	97	-0.96	-0.56
G 570	1.04	1.85	850.00	64.00	234.77	87	-1.14	-0.32
G 571	0.67	1.11	630.00	62.00	117.01	95	-1.71	-1.27
G 576	2.64	3.22	220.00	16.00	121.15	97	0.21	0.80
G 577	-0.53	0.41	320.00	1.30	98.53	99	-3.01	-2.06
G 581A	2.28	2.80	24.00	16.00	16.08	1	2.25	2.78
G 788	0.00	0.00	42.00	44.00	42.67	1	0.00	0.00
G 894	1.72	2.23	1400.00	34.00	177.30	76	-0.18	0.33
G 896	2.29	2.63	330.00	500.00	557.35	74	0.44	0.78
G 901	2.61	3.07	28.00	2200.00	674.98	96	0.21	0.67
G 939	1.62	1.93	2000.00	1500.00	2475.19	60	0.12	0.43
G1009B	2.80	2.88	18.00	22.00	34.27	100	0.30	0.38
G1035A	0.00	0.00	1000.00	1600.00	1254.38	1	0.00	0.00
G1179	1.87	2.25	4600.00	4300.00	4297.21	51	0.60	0.97
G1180	0.83	1.33	22.00	14.00	27.47	67	-0.84	-0.34
G1183	1.92	2.43	20.00	16.00	48.27	47	0.74	1.25
G1251	1.50	2.21	22.00	36.00	36.95	59	0.02	0.74
G1256	0.00	0.00	6900.00	6700.00	6359.67	1	0.00	0.00
G1264	1.70	2.18	76.00	94.00	77.36	7	1.53	2.01
G1265A	0.00	0.00	6600.00	5300.00	5048.24	1	0.00	0.00
G1268	2.23	2.13	250.00	220.00	427.69	1	2.20	2.11
G1270	1.94	2.38	26.00	20.00	21.79	27	1.27	1.70
G1350	1.50	2.12	100.00	24.00	52.61	1	1.48	2.10
G1351	1.66	1.94	2000.00	120.00	768.31	1	1.63	1.91
G1352	2.14	2.25	180.00	90.00	114.30	160	-1.86	-1.75
G1354	1.49	2.43	500.00	16.00	151.42	103	-1.09	-0.15
G1355	0.00	0.00	2800.00	2400.00	3162.50	154	0.00	0.00
G1356	0.00	0.00	1500.00	950.00	990.00	1	0.00	0.00
G1357	0.00	0.00	1300.00	22.00	661.00	203	0.00	0.00
G1603	2.00	2.47	4900.00	700.00	1751.14	1	1.98	2.45
G1604	1.93	2.89	28.00	62.00	53.99	62	0.38	1.34
G1604A	2.42	3.08	20.00	22.00	22.88	92	0.12	0.78
G3061	43.49	0.00	1200.00	1200.00	1200.00	1	43.46	-0.03
G3062	0.00	0.00	1200.00	1200.00	1200.00	1	0.00	0.00
G3124	0.00	0.00	72.00	72.00	72.00	12	0.00	0.00
G3157	0.00	3.58	22.00	94.00	26.55	110	0.00	0.00
G3158	0.00	0.00	24.00	10.00	18.60	1	0.00	0.00
G3159	0.00	0.00	190.00	56.00	188.93	1	0.00	0.00
G3160	0.00	0.00	20.00	72.00	44.00	1	0.00	0.00
G3161	0.00	0.00	380.00	400.00	404.29	1	0.00	0.00
G3162	1.80	2.09	310.00	1100.00	574.23	92	-0.50	-0.21
G3163	0.00	0.00	32.00	32.00	29.33	1	0.00	0.00
G3164	0.00	0.00	78.00	100.00	92.46	1	0.00	0.00
G3165	0.00	0.00	80.00	18.00	23.93	1	0.00	0.00
G3166	0.00	0.00	180.00	38.00	171.04	1	0.00	0.00
G3167	0.00	0.00	230.00	78.00	153.51	1	0.00	0.00

*Average Dry season water level minus theoretical head necessary to prevent saltwater intrusion
† Average Wet season water level minus theoretical head necessary to prevent saltwater intrusion

Table 5 (Continued). Data from Individual Biscayne Aquifer Monitoring Wells

Well ID	Dry season avg.water level (ft)	Wet season avg.water level (ft)	Initial Chloride (ppm)	Latest Chloride (ppm)	Avg. Chloride (ppm)	Well Depth (ft)	Dry Season Protection Criterion	Wet Season Protection Criterion
G3205	0.00	0.00	62.00	62.00	62.00	1	0.00	0.00
G3224	0.00	0.00	32.00	13.00	33.96	1	0.00	0.00
G3226	8.66	0.00	690.00	440.00	481.43	1	8.64	-0.03
G3229	0.00	0.00	850.00	290.00	359.52	85	0.00	0.00
G3235	0.00	0.00	44.00	48.00	46.08	1	0.00	0.00
G3235A	1.70	2.09	46.00	50.00	38.73	1	1.68	2.06
G3250	-3.32	-0.57	90.00	200.00	244.71	116	-6.22	-3.47
G3253A	-1.93	1.82	53.00	53.00	53.00	1	-1.95	1.79
G3260A	1.53	3.04	45.00	45.00	45.00	1	1.51	3.01
G3261A	1.87	3.01	50.00	50.00	50.00	1	1.84	2.99
G3262A	1.95	3.05	61.00	61.00	61.00	1	1.92	3.03
G3263A	1.94	3.12	45.00	45.00	45.00	1	1.92	3.09
G3264A	2.16	2.83	37.00	37.00	37.00	50	0.91	1.58
G3276	-0.42	1.70	51.00	51.00	51.00	1	-0.45	1.68
G3281	-1.67	0.72	45.00	45.00	45.00	1	-1.69	0.69
G3284	-1.05	0.50	41.00	41.00	41.00	1	-1.07	0.48
G3284A	0.74	2.06	45.00	45.00	45.00	1	0.72	2.03
G3284B	1.08	2.26	45.00	45.00	45.00	1	1.05	2.24
G3285	-2.83	0.00	37.00	37.00	37.00	1	-2.86	-0.03
G3285A	-0.84	0.00	43.00	43.00	43.00	1	-0.86	-0.03
G3286	0.60	1.44	39.00	39.00	39.00	1	0.57	1.42
G3286A	-4.20	-5.83	33.00	33.00	33.00	1	-4.22	-5.86
G3287	0.60	1.25	34.00	34.00	34.00	1	0.57	1.22
G3287A	-0.24	0.63	32.00	32.00	32.00	1	-0.26	0.61
G3288	2.30	3.27	43.00	43.00	43.00	1	2.27	3.25
G3288A	1.78	2.46	41.00	41.00	41.00	1	1.76	2.43
G3289	-0.12	0.85	45.00	45.00	45.00	1	-0.14	0.83
G3290	1.13	2.31	45.00	45.00	45.00	1	1.10	2.28
G3291	0.67	1.70	45.00	45.00	45.00	1	0.64	1.67
G3293	-0.98	3.38	23.00	23.00	23.00	1	-1.00	3.36
G3294	0.00	0.00	85.00	76.00	135.65	1	0.00	0.00
G3294B	0.00	0.00	96.00	96.00	96.00	78	0.00	0.00
G3295	0.00	0.00	16.00	97.00	40.95	1	0.00	0.00
G3295B	0.00	0.00	37.00	37.00	37.00	70	0.00	0.00
G3296	0.00	0.00	48.00	420.00	133.47	191	0.00	0.00
G3296B	0.00	0.00	33.00	33.00	33.00	56	0.00	0.00
G3297	0.00	0.00	64.00	190.00	134.62	1	0.00	0.00
G3297B	0.00	0.00	98.00	98.00	98.00	67	0.00	0.00
G3298	1.83	2.87	50.00	43.00	47.55	166	-2.32	-1.28
G3299	0.00	0.00	34.00	740.00	283.46	1	0.00	0.00
G3299B	0.00	0.00	42.00	42.00	42.00	90	0.00	0.00
G3299D	0.00	0.00	380.00	380.00	380.00	1	0.00	0.00
G3300	0.00	0.00	58.00	87.00	8675.23	1	0.00	0.00
G3300B	0.00	0.00	860.00	860.00	860.00	36	0.00	0.00
G3300D	0.00	0.00	100.00	100.00	100.00	1	0.00	0.00
G3301	0.00	0.00	38.00	39.00	36.27	173	0.00	0.00
G3301B	0.00	0.00	34.00	34.00	34.00	70	0.00	0.00
G3302	0.00	0.00	95.00	56.00	72.07	1	0.00	0.00
G3302B	0.00	0.00	53.00	53.00	53.00	84	0.00	0.00
G3303	0.00	0.00	62.00	290.00	127.70	182	0.00	0.00
G3303B	0.00	0.00	77.00	77.00	77.00	70	0.00	0.00
G3304	0.00	0.00	56.00	85.00	52.90	186	0.00	0.00
G3304B	0.00	0.00	46.00	46.00	46.00	73	0.00	0.00
G3305	0.00	0.00	46.00	50.00	43.50	177	0.00	0.00
G3305B	0.00	0.00	38.00	38.00	38.00	60	0.00	0.00
G3306	0.00	0.00	8.00	8.00	8.00	215	0.00	0.00
G3306B	0.00	0.00	37.00	37.00	37.00	97	0.00	0.00
G3306D	0.00	0.00	59.00	59.00	59.00	130	0.00	0.00
G3307	0.00	0.00	42.00	6600.00	6205.38	1	0.00	0.00
G3307B	0.00	0.00	39.00	39.00	39.00	60	0.00	0.00
G3308	0.00	0.00	44.00	39.00	42.64	170	0.00	0.00
G3308B	0.00	0.00	600.00	600.00	600.00	50	0.00	0.00
G3309	0.00	0.00	58.00	79.00	83.81	175	0.00	0.00
G3309B	0.00	0.00	99.00	99.00	99.00	64	0.00	0.00
G3310	0.00	0.00	36.00	10.00	21.95	1	0.00	0.00
G3310B	0.00	0.00	31.00	31.00	31.00	59	0.00	0.00

*Average Dry season water level minus theoretical head necessary to prevent saltwater intrusion
† Average Wet season water level minus theoretical head necessary to prevent saltwater intrusion

Table 5 (Continued). Data from Individual Biscayne Aquifer Monitoring Wells

Well ID	Dry season avg.water level (ft)	Wet season avg.water level (ft)	Initial Chloride (ppm)	Latest Chloride (ppm)	Avg. Chloride (ppm)	Well Depth (ft)	Dry Season Protection Criterion	Wet Season Protection Criterion
G3310C	0.00	0.00	10.00	10.00	10.00	133	0.00	0.00
G3311	0.00	0.00	26.00	15.00	21.00	217	0.00	0.00
G3311B	0.00	0.00	18.00	18.00	18.00	53	0.00	0.00
G3311D	0.00	0.00	13.00	13.00	13.00	160	0.00	0.00
G3312	0.00	0.00	18.00	15.00	16.89	1	0.00	0.00
G3312A	0.00	0.00	15.00	15.00	15.00	28	0.00	0.00
G3313	0.00	0.00	52.00	24.00	36.55	213	0.00	0.00
G3313B	0.00	0.00	45.00	45.00	45.00	53	0.00	0.00
G3314A	0.00	0.00	42.00	40.00	26.00	1	0.00	0.00
G3314C	0.00	0.00	13.00	13.00	13.00	1	0.00	0.00
G3315A	0.00	0.00	19.00	19.00	19.00	30	0.00	0.00
G3315C	0.00	0.00	16.00	19.00	17.50	117	0.00	0.00
G3316	0.00	0.00	62.00	8100.00	4545.41	1	0.00	0.00
G3316A	0.00	0.00	41.00	41.00	41.00	30	0.00	0.00
G3316C	0.00	0.00	8200.00	8200.00	8200.00	1	0.00	0.00
G3317	0.00	0.00	20.00	1600.00	1365.12	1	0.00	0.00
G3317B	0.00	0.00	16.00	16.00	16.00	1	0.00	0.00
G3318	0.00	0.00	18.00	750.00	583.76	1	0.00	0.00
G3318A	0.00	0.00	17.00	17.00	17.00	23	0.00	0.00
G3318B	0.00	0.00	610.00	610.00	610.00	1	0.00	0.00
G3318C	0.00	0.00	790.00	790.00	790.00	1	0.00	0.00
G3319	0.00	0.00	30.00	13.00	19.27	240	0.00	0.00
G3319B	0.00	0.00	11.00	11.00	11.00	81	0.00	0.00
G3320	0.00	0.00	29.00	29.00	29.00	86	0.00	0.00
G3320B	0.00	0.00	29.00	29.00	29.00	50	0.00	0.00
G3322	0.00	0.00	1200.00	12000.00	10372.73	1	0.00	0.00
G3323	0.00	0.00	2900.00	2900.00	2900.00	1	0.00	0.00
G3323B	0.00	0.00	1200.00	1200.00	1200.00	1	0.00	0.00
G3324	0.00	0.00	24.00	570.00	2046.96	1	0.00	0.00
G3324B	0.00	0.00	31.00	31.00	31.00	30	0.00	0.00
G3324C	0.00	0.00	13000.00	13000.00	13000.00	1	0.00	0.00
G3326	-1.92	1.55	53.00	53.00	53.00	1	-1.94	1.53
G3332	1.55	4.31	54.00	54.00	54.00	1	1.53	4.28
G3334	0.00	0.00	44.00	36.00	36.80	1	0.00	0.00
G3334A	0.00	0.00	30.00	29.00	29.67	1	0.00	0.00
G3334B	0.00	0.00	32.00	29.00	31.83	1	0.00	0.00
G3335	0.00	0.00	30.00	27.00	29.00	1	0.00	0.00
G3335A	0.00	0.00	27.00	27.00	28.00	1	0.00	0.00
G3336	1.88	2.54	34.00	42.00	40.21	38	0.93	1.59
G3337	1.76	2.32	84.00	86.00	92.51	100	-0.74	-0.18
G3338	2.02	2.48	48.00	70.00	61.43	58	0.57	1.03
G3339	1.86	2.32	60.00	94.00	79.52	58	0.41	0.87
G3340	1.60	2.06	4300.00	2600.00	3385.71	48	0.40	0.86
G3341	1.74	2.23	16.00	20.00	18.41	1	1.71	2.20
G3342	1.69	2.14	2400.00	2400.00	2562.96	79	-0.29	0.17
G3343	1.24	1.74	22.00	27.00	25.82	1	1.21	1.71
G3344	2.17	2.68	230.00	84.00	107.83	59	0.70	1.20
G3345	1.63	1.88	1700.00	2500.00	2117.14	79	-0.35	-0.10
G3346	1.52	2.05	8300.00	7500.00	7831.82	1	1.50	2.02
G3347	1.49	2.15	3900.00	200.00	3700.00	1	1.47	2.12
G3348	1.74	2.13	78.00	19.00	178.19	62	0.19	0.58
G3349	1.48	1.88	3800.00	5600.00	5077.42	66	-0.17	0.23
G3350	1.90	2.24	20.00	45.00	21.50	83	-0.17	0.16
G3351	1.72	2.20	2100.00	2400.00	2121.43	1	1.69	2.17
G3358	0.00	0.00	18.00	18.00	18.00	1	0.00	0.00
G3359	0.00	0.00	20.00	20.00	20.00	1	0.00	0.00
G3360	0.00	0.00	33.00	33.00	33.00	1	0.00	0.00
G3361	0.00	0.00	39.00	39.00	39.00	1	0.00	0.00
G3362	0.00	0.00	58.00	58.00	58.00	1	0.00	0.00
G3363	0.00	0.00	67.00	67.00	67.00	1	0.00	0.00
G3364	0.00	0.00	20.00	20.00	20.00	1	0.00	0.00
G3365	0.00	0.00	11.00	11.00	11.00	1	0.00	0.00
G3366	0.00	0.00	32.00	32.00	32.00	1	0.00	0.00
G3367	0.00	0.00	360.00	450.00	582.50	1	0.00	0.00
G3368	0.00	0.00	34.00	34.00	34.00	1	0.00	0.00
G3369	0.00	0.00	620.00	620.00	620.00	1	0.00	0.00

*Average Dry season water level minus theoretical head necessary to prevent saltwater intrusion
† Average Wet season water level minus theoretical head necessary to prevent saltwater intrusion

Table 5 (Continued). Data from Individual Biscayne Aquifer Monitoring Wells

Well ID	Dry season avg.water level (ft)	Wet season avg.water level (ft)	Initial Chloride (ppm)	Latest Chloride (ppm)	Avg. Chloride (ppm)	Well Depth (ft)	Dry Season Protection Criterion	Wet Season Protection Criterion
G3370	0.00	0.00	15.00	9.40	12.20	1	0.00	0.00
G3371	0.00	0.00	17.00	17.00	17.00	1	0.00	0.00
G3372	0.00	0.00	47.00	47.00	47.00	1	0.00	0.00
G3373	0.00	0.00	45.00	45.00	45.00	9	0.00	0.00
G3374	0.00	0.00	200.00	200.00	200.00	1	0.00	0.00
G3375	0.00	0.00	14.00	14.00	14.00	1	0.00	0.00
G3376C	0.00	0.00	8.80	8.80	8.80	1	0.00	0.00
G3377B	0.00	0.00	11.00	11.00	11.00	1	0.00	0.00
G3377C	0.00	0.00	11.00	11.00	11.00	1	0.00	0.00
G3378A	0.00	0.00	27.00	19.00	22.00	1	0.00	0.00
G3378B	0.00	0.00	21.00	18.00	20.50	1	0.00	0.00
G3378C	0.00	0.00	50.00	20.00	29.43	1	0.00	0.00
G3379A	0.00	0.00	22.00	22.00	22.00	1	0.00	0.00
G3379B	0.00	0.00	26.00	23.00	22.29	1	0.00	0.00
G3379C	0.00	0.00	15.00	21.00	18.88	1	0.00	0.00
G3380A	0.00	0.00	21.00	22.00	21.50	1	0.00	0.00
G3380B	0.00	0.00	21.00	22.00	22.50	1	0.00	0.00
G3380C	0.00	0.00	15.00	22.00	18.71	1	0.00	0.00
G3381A	0.00	0.00	36.00	51.00	44.00	1	0.00	0.00
G3381C	0.00	0.00	37.00	51.00	42.33	1	0.00	0.00
G3382A	0.00	0.00	37.00	49.00	41.71	1	0.00	0.00
G3382B	0.00	0.00	35.00	49.00	41.00	1	0.00	0.00
G3382C	0.00	0.00	34.00	50.00	40.88	1	0.00	0.00
G3383A	0.00	0.00	38.00	50.00	43.17	1	0.00	0.00
G3383B	0.00	0.00	38.00	49.00	42.17	1	0.00	0.00
G3383C	0.00	0.00	37.00	48.00	39.67	1	0.00	0.00
G3384A	0.00	0.00	2500.00	2600.00	2240.00	1	0.00	0.00
G3384B	0.00	0.00	960.00	1100.00	1032.00	1	0.00	0.00
G3384C	0.00	0.00	790.00	1300.00	845.71	1	0.00	0.00
G3385A	0.00	0.00	9800.00	10000.00	9900.00	1	0.00	0.00
G3385B	0.00	0.00	1200.00	1200.00	1242.86	1	0.00	0.00
G3385C	0.00	0.00	520.00	630.00	488.75	1	0.00	0.00
G3386A	0.00	0.00	1500.00	1400.00	1360.00	1	0.00	0.00
G3386B	0.00	0.00	1200.00	1200.00	1200.00	1	0.00	0.00
G3386C	0.00	0.00	160.00	330.00	204.29	1	0.00	0.00
G3387A	0.00	0.00	29.00	35.00	31.75	1	0.00	0.00
G3387B	0.00	0.00	30.00	32.00	30.00	1	0.00	0.00
G3387C	0.00	0.00	27.00	29.00	28.80	1	0.00	0.00
G3388A	0.00	0.00	32.00	32.00	30.75	1	0.00	0.00
G3388B	0.00	0.00	29.00	33.00	30.17	1	0.00	0.00
G3388C	0.00	0.00	36.00	48.00	38.57	1	0.00	0.00
G3396A	0.00	0.00	64.00	63.00	64.00	1	0.00	0.00
G3396B	0.00	0.00	65.00	63.00	64.00	1	0.00	0.00
G3398A	2.50	2.88	23.00	24.00	23.33	1	2.48	2.86
G3398B	0.00	0.00	25.00	27.00	26.00	1	0.00	0.00
G3399B	0.00	0.00	24.00	23.00	23.50	1	0.00	0.00
G3399C	0.00	0.00	27.00	24.00	25.50	1	0.00	0.00
G3400A	0.00	0.00	38.00	38.00	38.00	1	0.00	0.00
G3400B	0.00	0.00	40.00	42.00	41.00	1	0.00	0.00
G3401A	0.00	0.00	37.00	42.00	39.50	1	0.00	0.00
G3401B	0.00	0.00	38.00	42.00	40.00	1	0.00	0.00
G3403A	0.00	0.00	34.00	36.00	35.00	1	0.00	0.00
G3403B	0.00	0.00	7.10	30.00	18.55	1	0.00	0.00
G3405C	0.00	0.00	19000.00	19000.00	19000.00	1	0.00	0.00
G3406B	0.00	0.00	20000.00	20000.00	20000.00	1	0.00	0.00
G3407A	0.00	0.00	20000.00	20000.00	20000.00	1	0.00	0.00
S 68A	0.00	0.00	420.00	250.00	269.64	1	0.00	0.00
S 531	0.00	0.00	26.00	42.00	33.59	1	0.00	0.00
PB 445	17.18	17.52	48.00	48.00	48.00	11	16.90	17.24
PB 467	0.00	0.00	55.00	38.00	48.82	98	0.00	0.00
PB 490	1.51	2.00	1600.00	390.00	572.10	127	-1.66	-1.17
PB 491	2.90	3.25	6200.00	14000.00	10384.76	207	-2.27	-1.93
PB 492	2.28	3.12	25.00	20.00	23.87	163	-1.80	-0.95
PB 555	3.61	4.31	36.00	26.00	26.33	200	-1.39	-0.69
PB 565	3.58	3.35	10.00	52.00	31.00	22	3.03	2.80
PB 567	2.60	3.03	30.00	34.00	30.36	93	0.28	0.70

*Average Dry season water level minus theoretical head necessary to prevent saltwater intrusion
† Average Wet season water level minus theoretical head necessary to prevent saltwater intrusion

Table 5 (Continued). Data from Individual Biscayne Aquifer Monitoring Wells

Well ID	Dry season avg.water level (ft)	Wet season avg.water level (ft)	Initial Chloride (ppm)	Latest Chloride (ppm)	Avg. Chloride (ppm)	Well Depth (ft)	Dry Season Protection Criterion	Wet Season Protection Criterion
PB 568A	0.00	0.00	92.00	90.00	91.67	41	0.00	0.00
PB 568B	0.00	0.00	79.00	67.00	73.00	52	0.00	0.00
PB 568C	0.00	0.00	63.00	60.00	63.00	77	0.00	0.00
PB 569B	0.00	0.00	50.00	50.00	50.00	43	0.00	0.00
PB 569C	0.00	0.00	39.00	39.00	39.00	73	0.00	0.00
PB 595	1.22	1.61	12000.00	11000.00	9961.60	114	-1.63	-1.24
PB 596	1.84	2.18	55.00	40.00	77.54	62	0.29	0.63
PB 605	0.00	0.00	60.00	60.00	60.00	49	0.00	0.00
PB 606	0.00	0.00	53.00	53.00	53.00	48	0.00	0.00
PB 610B	0.00	0.00	71.00	66.00	69.25	73	0.00	0.00
PB 620	7.55	8.10	18.00	14.00	22.10	32	6.75	7.30
PB 632	3.43	4.06	2500.00	7200.00	5291.85	272	-3.37	-2.74
PB 634	0.00	0.00	12000.00	18000.00	15086.96	1	0.00	0.00
PB 689	24.30	24.69	22.00	22.00	22.00	17	23.87	24.27
PB 690	1.54	1.19	5500.00	6600.00	8483.72	1	1.51	1.17
PB 692	0.86	1.41	10000.00	13000.00	68748.94	1	0.83	1.38
PB 693	3.46	4.30	29.00	990.00	325.25	275	-3.42	-2.58
PB 694	3.57	4.11	130.00	2200.00	1039.75	249	-2.66	-2.12
PB 710	3.19	3.60	64.00	44.00	63.14	18	2.74	3.15
PB 711	8.69	9.64	23.00	35.00	20.00	23	8.11	9.06
PB 717	21.22	21.86	24.00	21.00	22.50	1	21.19	21.84
PB 718	0.00	0.00	32.00	32.00	32.00	1	0.00	0.00
PB 732	5.66	6.57	48.00	48.00	48.00	100	3.16	4.07
PB 738	0.00	0.00	79.00	57.00	68.00	1	0.00	0.00
PB 746	2.43	2.90	98.00	68.00	99.29	82	0.38	0.85
PB 752	3.76	4.89	15.00	18.00	16.50	23	3.18	4.31
PB 789	4.33	4.79	30.00	12.00	39.00	20	3.83	4.29
PB 808	0.00	0.00	49.00	57.00	53.33	150	0.00	0.00
PB 809	10.07	10.85	28.00	28.00	26.40	145	6.45	7.22
PB 832	1.00	1.40	51.00	74.00	70.49	141	-2.52	-2.13
PB 833	0.00	0.00	54.00	12.00	44.47	1	0.00	0.00
PB 834B	2.34	3.35	2400.00	3500.00	5187.36	201	-2.68	-1.68
PB 835B	2.30	3.25	100.00	78.00	76.53	120	-0.70	0.25
PB 843	0.00	0.00	580.00	580.00	580.00	1	0.00	0.00
PB 849	2.29	0.00	620.00	2500.00	1317.14	1	2.26	-0.03
PB 875	13.40	14.04	53.00	33.00	42.00	24	12.80	13.44
PB 880	13.36	13.88	49.00	120.00	69.26	118	10.41	10.93
PB 889	3.38	3.87	1800.00	2400.00	2149.30	200	-1.62	-1.13
PB 895	2.87	3.37	36.00	30.00	44.25	19	2.40	2.90
PB 896	2.89	3.45	35.00	32.00	35.92	85	0.77	1.33
PB 897	2.22	2.62	51.00	93.00	55.70	23	1.65	2.05
PB 898	0.00	0.00	210.00	210.00	210.00	95	0.00	0.00
PB 900	14.46	14.73	40.00	40.00	40.00	63	12.89	13.16
PB 917	1.73	0.00	7200.00	6500.00	6850.00	85	-0.39	-2.12
PB 921	0.96	1.49	8900.00	11000.00	9695.00	150	-2.79	-2.26
PB 922	0.66	0.03	15.00	40.00	43.00	140	-2.84	-3.47
PB 928	8.52	9.09	33.00	33.00	31.88	115	5.65	6.21
PB 929	0.00	0.00	24.00	24.00	24.33	65	0.00	0.00
PB 931	0.00	0.00	25.00	27.00	24.20	90	0.00	0.00
PB 934	0.00	0.00	73.00	87.00	69.50	15	0.00	0.00
PB 935	15.51	15.83	38.00	38.00	38.00	48	14.31	14.63
PB 936	0.00	0.00	58.00	53.00	55.50	15	0.00	0.00
PB 940	0.00	0.00	100.00	100.00	100.00	65	0.00	0.00
PB 941	0.00	0.00	71.00	71.00	71.00	85	0.00	0.00
PB 942	0.00	0.00	72.00	68.00	67.00	65	0.00	0.00
PB 943	0.00	0.00	120.00	120.00	120.00	70	0.00	0.00
PB 944	0.00	0.00	27.00	27.00	27.00	75	0.00	0.00
PB 947	2.86	3.38	30.00	24.00	32.49	87	0.69	1.20
PB 948	1.66	2.12	1300.00	10000.00	6863.95	175	-2.72	-2.26
PB 949	3.57	4.28	220.00	1700.00	635.37	196	-1.33	-0.62
PB1006	2.19	2.63	72.00	60.00	54.62	17	1.77	2.20
PB1008	0.00	0.00	62.00	62.00	62.00	19	0.00	0.00
PB1009	0.00	0.00	30.00	30.00	30.00	16	0.00	0.00
PB1010	0.00	0.00	14.00	14.00	14.00	18	0.00	0.00
PB1011	0.00	0.00	37.00	37.00	37.00	26	0.00	0.00
PB1013	0.00	0.00	25.00	28.00	26.50	15	0.00	0.00

*Average Dry season water level minus theoretical head necessary to prevent saltwater intrusion
† Average Wet season water level minus theoretical head necessary to prevent saltwater intrusion

Table 5 (Continued). Data from Individual Biscayne Aquifer Monitoring Wells

Well ID	Dry season avg.water level (ft)	Wet season avg.water level (ft)	Initial Chloride (ppm)	Latest Chloride (ppm)	Avg. Chloride (ppm)	Well Depth (ft)	Dry Season Protection Criterion	Wet Season Protection Criterion
PB1014	0.00	0.00	26.00	26.00	26.00	15	0.00	0.00
PB1015	0.00	0.00	17.00	20.00	18.33	16	0.00	0.00
PB1016	0.00	0.00	21.00	21.00	21.00	22	0.00	0.00
PB1020	0.00	0.00	25.00	24.00	24.50	116	0.00	0.00
PB1022	1.50	0.00	1900.00	1900.00	1900.00	1	1.48	-0.03
PB1026	0.00	0.00	27.00	27.00	27.00	84	0.00	0.00
PB1033	0.00	0.00	110.00	110.00	110.00	115	0.00	0.00
PB1035	0.00	0.00	100.00	89.00	94.50	86	0.00	0.00
PB1037	0.00	0.00	11.00	10.00	10.50	24	0.00	0.00
PB1060	0.00	0.00	38.00	38.00	38.00	68	0.00	0.00
PB1061	0.00	0.00	23.00	23.00	23.00	42	0.00	0.00
PB1063	7.27	7.90	52.00	60.00	58.98	134	3.92	4.55
PB1085	0.00	0.00	67.00	69.00	68.00	87	0.00	0.00
PB1088	0.00	0.00	140.00	140.00	140.00	1	0.00	0.00
PB1089	10.34	11.26	93.00	35.00	71.00	135	6.96	7.88
PB1091	0.00	0.00	42.00	42.00	42.00	100	0.00	0.00
PB1094	0.00	0.00	210.00	200.00	205.00	100	0.00	0.00
PB1097	15.50	16.15	53.00	65.00	59.00	90	13.25	13.90
PB1098	0.00	0.00	82.00	82.00	82.00	80	0.00	0.00
PB1099	0.00	0.00	1100.00	1100.00	1100.00	90	0.00	0.00
PB1100	0.00	0.00	77.00	71.00	74.00	1	0.00	0.00
PB1101	0.00	0.00	33.00	32.00	32.50	95	0.00	0.00
PB1103	0.00	0.00	37.00	37.00	37.00	120	0.00	0.00
PB1104	0.00	0.00	37.00	38.00	37.50	105	0.00	0.00
PB1107	14.05	14.37	170.00	170.00	170.00	105	11.42	11.75
PB1108	13.80	14.41	130.00	130.00	130.00	90	11.55	12.16
PB1109	0.00	0.00	860.00	840.00	850.00	1	0.00	0.00
PB1110	0.00	0.00	20.00	20.00	20.00	55	0.00	0.00
PB1111	14.57	0.00	10.00	50.00	30.00	1	14.55	-0.03
PB1122	0.00	0.00	19.00	19.00	19.00	55	0.00	0.00
PB1123	0.00	0.00	14.00	14.00	14.00	25	0.00	0.00
PB1124	0.00	0.00	140.00	140.00	140.00	1	0.00	0.00
PB1126	0.00	0.00	120.00	120.00	120.00	1	0.00	0.00
PB1127	0.00	0.00	11.00	11.00	11.00	25	0.00	0.00
PB1128	0.00	0.00	290.00	290.00	290.00	1	0.00	0.00
PB1129	0.00	0.00	60.00	60.00	60.00	30	0.00	0.00
PB1131	0.00	0.00	88.00	88.00	88.00	30	0.00	0.00
PB1134	0.00	0.00	140.00	140.00	140.00	1	0.00	0.00
PB1135	0.00	0.00	56.00	56.00	56.00	1	0.00	0.00
PB1151	3.26	3.89	39.00	330.00	36.03	138	-0.19	0.44
PB1152	12.43	13.22	110.00	28.00	69.00	1	12.40	13.20
PB1153	12.43	13.02	28.00	28.00	28.00	1	12.41	12.99
PB1155	13.45	14.10	39.00	20.00	29.80	75	11.57	12.23
PB1156	14.45	14.58	37.00	37.00	37.00	1	14.43	14.55
PB1157	13.69	14.00	46.00	22.00	38.67	1	13.67	13.98
PB1160	5.33	6.04	10.00	10.00	10.00	20	4.83	5.54
PB1236	0.00	0.00	44.00	44.00	44.00	1	0.00	0.00
PB1428	0.00	0.00	220.00	1700.00	1073.00	127	0.00	0.00
PB1455	3.73	4.27	30.00	26.00	26.12	157	-0.20	0.35
PB1456	4.82	5.41	22.00	22.00	20.77	193	0.00	0.59
PB1457	4.48	5.14	21.00	24.00	26.43	203	-0.60	0.06
PB1460	0.00	0.00	21.00	39.00	30.00	30	0.00	0.00
PB1461	0.00	0.00	170.00	170.00	170.00	1	0.00	0.00
PB1462	0.00	0.00	200.00	200.00	200.00	1	0.00	0.00
PB1463	0.00	0.00	250.00	1200.00	523.33	1	0.00	0.00
PB1464	0.00	0.00	440.00	440.00	440.00	1	0.00	0.00
PB1465	0.00	0.00	1800.00	1700.00	1750.00	1	0.00	0.00
PB1466	0.00	0.00	220.00	220.00	220.00	1	0.00	0.00
PB1467	0.00	0.00	3200.00	3200.00	3200.00	1	0.00	0.00
PB1468	0.00	0.00	600.00	600.00	600.00	1	0.00	0.00
PB1469	0.00	0.00	180.00	180.00	180.00	1	0.00	0.00
PB1471	0.00	0.00	880.00	460.00	670.00	1	0.00	0.00
PB1472	0.00	0.00	140.00	140.00	140.00	1	0.00	0.00
PB1473	0.00	0.00	350.00	320.00	335.00	1	0.00	0.00
PB1475	0.00	0.00	120.00	120.00	120.00	1	0.00	0.00
PB1476	0.00	0.00	110.00	110.00	110.00	1	0.00	0.00

*Average Dry season water level minus theoretical head necessary to prevent saltwater intrusion
† Average Wet season water level minus theoretical head necessary to prevent saltwater intrusion

Table 5 (Continued). Data from Individual Biscayne Aquifer Monitoring Wells

Well ID	Dry season avg.water level (ft)	Wet season avg.water level (ft)	Initial Chloride (ppm)	Latest Chloride (ppm)	Avg. Chloride (ppm)	Well Depth (ft)	Dry Season Protection Criterion	Wet Season Protection Criterion
PB1477	0.00	0.00	540.00	530.00	535.00	1	0.00	0.00
PB1478	0.00	0.00	130.00	130.00	130.00	1	0.00	0.00
PB1480	0.00	0.00	100.00	160.00	130.00	1	0.00	0.00
PB1481	0.00	0.00	9400.00	9400.00	9400.00	1	0.00	0.00
PB1482	0.00	0.00	9400.00	9400.00	9400.00	1	0.00	0.00
PB1483	0.00	0.00	9600.00	9600.00	9600.00	1	0.00	0.00
PB1484	0.00	0.00	5300.00	5400.00	5350.00	1	0.00	0.00
PB1485	0.00	0.00	4200.00	4200.00	4200.00	1	0.00	0.00
PB1486	0.00	0.00	4200.00	4200.00	4200.00	32	0.00	0.00
PB1496	2.92	3.54	34.00	310.00	84.36	200	-2.08	-1.46
PB1510	14.30	0.00	250.00	250.00	250.00	1	14.28	-0.03
PB1512	14.39	0.00	190.00	190.00	190.00	1	14.37	-0.03
PB1514	14.70	0.00	24.00	24.00	24.00	1	14.68	-0.03
PB1517	14.59	0.00	6.40	6.40	6.40	1	14.57	-0.03
PB1519	14.89	0.00	14.00	14.00	14.00	1	14.87	-0.03
PB1520	11.59	14.48	17.00	20.00	30.68	22	11.04	13.93
PB1522	0.00	0.00	34.00	29.00	30.71	22	0.00	0.00
PB1524	16.86	18.05	520.00	550.00	441.19	1	16.84	18.02
PB1547	16.41	17.19	6.00	10.00	8.00	115	13.53	14.32
PB1548	16.26	16.89	60.00	50.00	54.00	60	14.76	15.39
PB1552	16.92	17.78	560.00	580.00	577.50	1	16.89	17.75
PB1553	16.78	18.33	640.00	490.00	566.67	1	16.76	18.31
PB1560	17.72	19.24	1200.00	1100.00	1125.00	1	17.69	19.21
PB1561	17.78	20.33	2300.00	2200.00	2250.00	1	17.76	20.31
PB1583	17.44	17.00	190.00	140.00	134.00	1	17.42	16.98
PB1584	0.00	0.00	22.00	21.00	22.33	1	0.00	0.00
PB1585	0.00	0.00	27.00	24.00	25.50	1	0.00	0.00
PB1589A	0.00	0.00	65.00	26.00	110.33	1	0.00	0.00
PB1589B	0.00	0.00	67.00	70.00	73.00	1	0.00	0.00
PB1589C	0.00	0.00	58.00	58.00	58.00	1	0.00	0.00
PB1589D	0.00	0.00	50.00	65.00	64.33	1	0.00	0.00
PB1589E	0.00	0.00	27.00	24.00	29.00	1	0.00	0.00
PB1589F	0.00	0.00	26.00	99.00	45.00	1	0.00	0.00
PB1590A	17.61	18.60	32.00	16.00	22.67	1	17.59	18.57
PB1590B	0.00	0.00	120.00	220.00	200.00	1	0.00	0.00
PB1590C	0.00	0.00	280.00	210.00	220.00	1	0.00	0.00
PB1590D	0.00	0.00	280.00	140.00	213.33	1	0.00	0.00
PB1590E	0.00	0.00	280.00	240.00	256.67	1	0.00	0.00
PB1590F	0.00	0.00	96.00	96.00	100.67	1	0.00	0.00
PB1590G	0.00	0.00	13.00	15.00	14.67	1	0.00	0.00
PB1609A	0.00	0.00	10.00	11.00	12.67	1	0.00	0.00
PB1609B	0.00	0.00	11.00	15.00	15.33	1	0.00	0.00
PB1609C	0.00	0.00	33.00	110.00	53.67	1	0.00	0.00
PB1609D	0.00	0.00	150.00	160.00	153.33	1	0.00	0.00
PB1609E	0.00	0.00	51.00	65.00	63.67	1	0.00	0.00
PB1609F	0.00	0.00	94.00	140.00	111.33	1	0.00	0.00
PB1609G	0.00	0.00	20.00	47.00	28.67	1	0.00	0.00
PB1609H	0.00	0.00	20.00	9.00	12.80	1	0.00	0.00
PB1643	5.69	6.35	26.00	32.00	28.00	87	3.52	4.17
PB1647	4.07	5.22	30.00	24.00	24.67	1	4.05	5.20
PB1651	0.00	0.00	36.00	39.00	41.63	1	0.00	0.00
PB1652	0.00	0.00	39.00	37.00	41.68	1	0.00	0.00
PB1653	0.00	0.00	140.00	120.00	119.43	1	0.00	0.00
PB1669	4.76	6.10	38.00	34.00	36.56	131	1.48	2.82
PB1686	4.10	5.31	34.00	40.00	38.00	126	0.95	2.16

*Average Dry season water level minus theoretical head necessary to prevent saltwater intrusion
† Average Wet season water level minus theoretical head necessary to prevent saltwater intrusion